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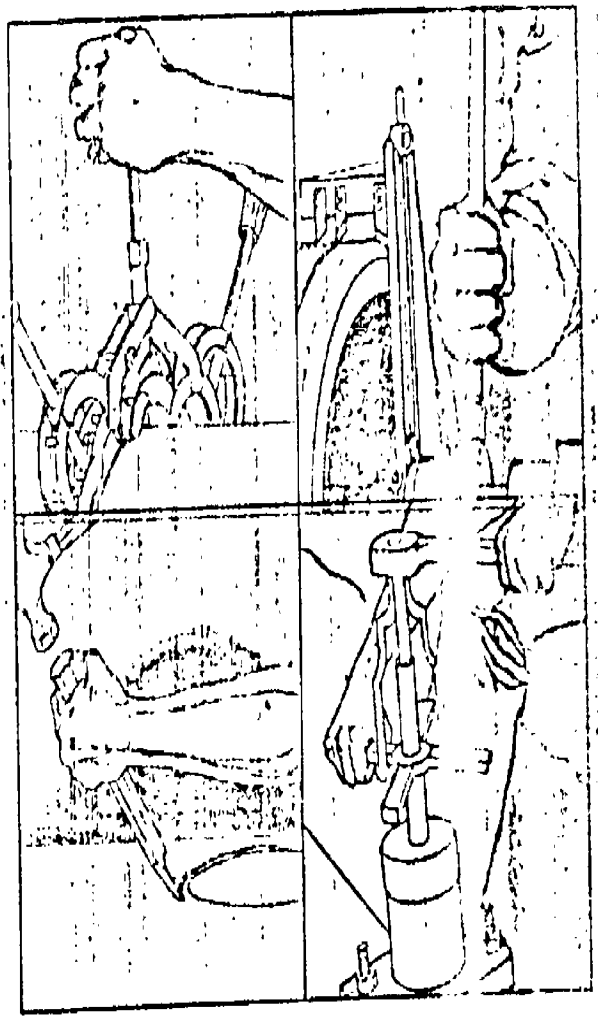
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AMERICAN WATER WORKS ASSOCIATION

AWWA C605-81



Recommended Work Practices for A/C Pipe

F12217

A/C Pipe Producers Association
1600 Wilson Boulevard, Suite 1308, Arlington, Virginia 22209

A/C Pipe Producers Association

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Introduction

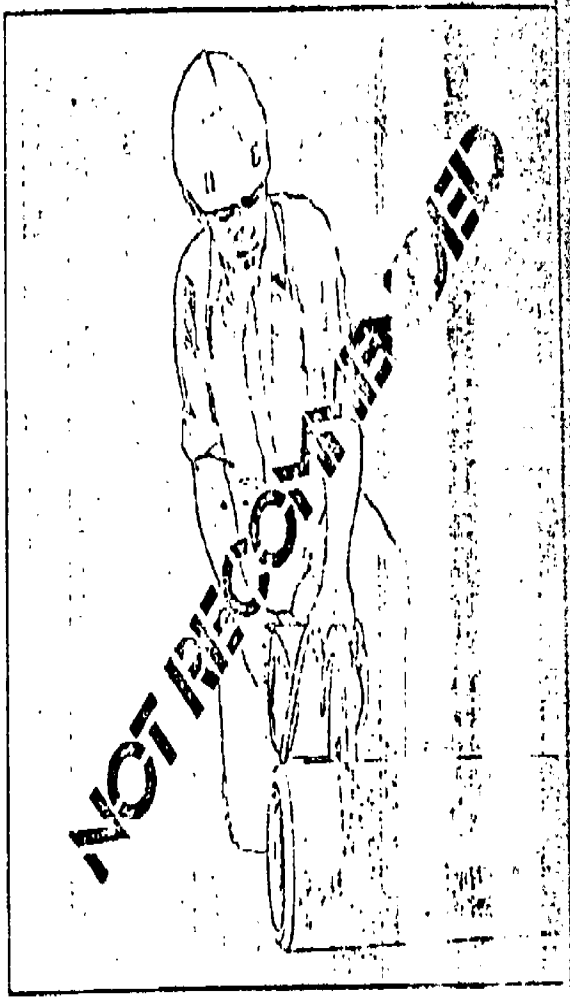
The Occupational Safety and Health Act in the United States and similar laws in Canada and other countries were enacted to ensure so far as possible, every worker a safe and healthy work place. This legislation is far-reaching. It covers millions of employees and nearly every employer, including those involved in utility duct and pipeline construction.

In keeping with the spirit and intent of these laws, the asbestos-cement pipe industry is cooperating with labor by disseminating information regarding the potential hazards of exposure to airborne asbestos and the means of reducing such potential hazards through good work practices.

Good work practices is what this booklet is about. The recommendations that appear on the following pages are the result of field testing and were developed through study.* They are intended as general guides to achieve safe and clean job site conditions when working with asbestos-cement (A/C) pipe products. Since field conditions will vary, adherence to these work practices will not necessarily guarantee compliance with national, state or local regulations. Questions relating to compliance should be directed to appropriate regulatory agencies.

The A/C Pipe Producers Association believes this booklet will be helpful to engineers, superintendents, contractors, foremen and laying crews in understanding and explaining established procedures for the safe handling of A/C pipe products.

Cuttin
Abrasive Disc–Di



Power driven saws with abrasive discs (masonry blades) should not be used for dry cutting or beveling asbestos-cement pipe. Abrasive disc cutters produce concentrations of airborne asbestos dust which exceed OSHA permissible levels. THIS WORK PRACTICE IS THEREFORE SPECIFICALLY NOT RECOMMENDED.

A/C Pipe Products: All
Size Range: All

F122119

Housekeeping and Waste Disposal

Housekeeping is an important part of any safe construction operation. It is even more essential when airborne dust created by the *lack* of good housekeeping has the potential for harm to employees or others.

EQUIPMENT: All external surfaces of equipment should be maintained free of dust accumulations that might, if dispersed, create asbestos fiber concentrations above permissible exposure limits.

WASTE DISPOSAL: Asbestos-cement chips and cuttings from the field operations described in this booklet should be disposed of in a manner that will not contribute airborne asbestos dust to the atmosphere. Where cutting and machining operations are performed at the construction site, the chips should be placed in the trench and buried with the pipeline.

Where operations are performed at a central location such as a contractor's or distributor's yard on a more or less continuing basis, the chips and cuttings may be collected and mixed wet with cement and made into non-friable forms. These forms may be used in the trench as supports for cast iron fittings and valves, as appropriate.

Otherwise, chips and cuttings should be collected in sealed bags or closed containers impermeable to asbestos dust. *Loose material should never be dry swept.* When vacuum equipment is available, it should be used. Water or other dust suppressants should be applied in those circumstances where sweeping is unavoidable. DO NOT BLOW WASTE MATERIAL WITH COMPRESSED AIR.

No visible emissions to the atmosphere may result from the collection, processing, packaging, transporting or deposition of any asbestos-containing material. Wastes should be disposed at a site operated in accordance with the requirements or applicable national, state or local laws.

Asbestos and Health

As you are aware, airborne asbestos fiber has been identified as a possible health hazard. Very few things to which we are exposed are "zero risks." But like the automobile, electricity and x-rays, there are non-harmful ways to use potentially harmful things.

Generally, asbestos-cement (A/C) pipe products contain less than 20% asbestos. The asbestos fibers are not free, but encapsulated or "locked-in" the cement binder like reinforcing rods in concrete. The distinction between "free" and "bound" asbestos is extremely important. First of all, it determines the probability of fiber release, which in turn directly relates to the probability of risk. More importantly, it explains clearly and simply why A/C pipe is a non-harmful use of asbestos.

Experience has shown that minimizing exposure to airborne asbestos dust is the only effective method of preventing asbestos-related diseases. Recommended work practices are the best assurance of providing exposure safeguards for yourself and your employees.

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Summary of OSHA Asbestos Standard

The Occupational Safety and Health Act was signed into law on December 29, 1970, and became effective on April 28, 1971. On December 7, 1971, the Secretary of Labor issued a temporary standard for exposure to asbestos dust. As required by the Act, a permanent standard for asbestos exposure was promulgated six months later.

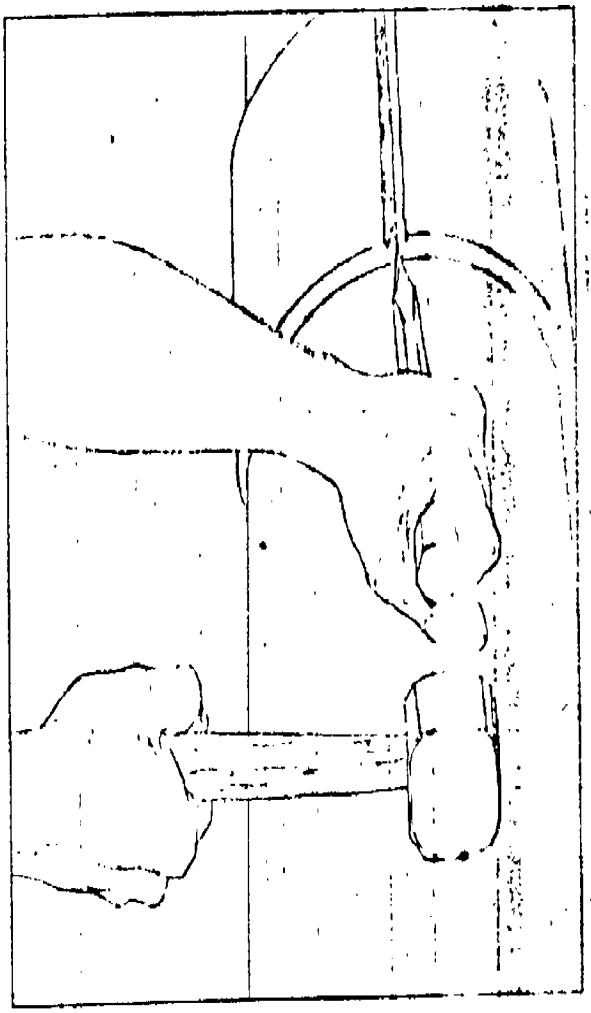
Under the current standard, it is the employer's responsibility to assure that exposure of employees to airborne concentrations of asbestos fibers does not exceed the following "permissible exposure levels":

a. Eight hour time weighted average: Two fibers, longer than 5 micrometers, per cubic centimeter.
b. Ceiling concentrations: Ten fibers, longer than 5 micrometers, per cubic centimeter.

In October, 1975, OSHA proposed a revision to the current standard which would reduce the eight hour time weighted average exposure to 0.5 fibers per cubic centimeter of air and ceiling concentrations to 5.0 fibers per cubic centimeter. In their notice, OSHA stated that a separate "construction industry standard" would be issued to cover workers who handle asbestos-containing products. This work practice booklet will be revised as necessary to reflect any changes the construction industry standard may necessitate.

The work practices recommended in this booklet are based on data for "peak dust concentrations" representing short time periods of maximum exposure. Field cutting and machining operations involving A/C pipe are normally infrequent and of short duration. Using these recommended work practices, it is improbable that field personnel would be exposed in a typical working day to levels exceeding the eight hour time weighted average.

Coupling Removal Hammer and Chisel*



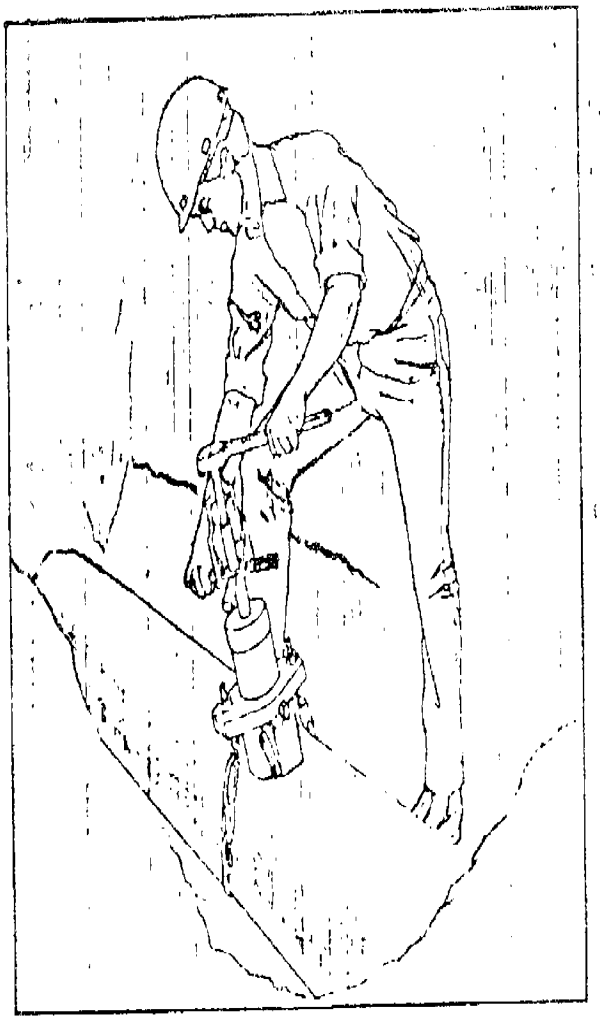
Replacement of damaged pipe necessitates excavation, exposure and removal. Coupling removal may be accomplished by gradually splitting the coupling lengthwise, using a chisel and ball peen hammer. After the top of the coupling has been split, a crowbar or similar tool is used as a lever to split the bottom of the coupling.

A/C Pipe Products: All pipe with A/C couplings
Size Range: All

F 122121

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Tapping Pressure*



Pressure or "wet" tapping for service connections is performed in the trench while the pipe is under pressure. The equipment (manual or power driven) is affixed to the pipe by means of a chain yoke. A combination boring and inserting bar drills and taps the pipe wall and inserts a corporation stop or pipe plug. The pressure chamber, which protects against water leakage, also catches the asbestos-cement chips, so this is essentially a dust-free operation.

To minimize (a) the fouling of valves, regulators, meters, etc. with chips and (b) unnecessary addition of asbestos to drinking water, provisions should be made for downstream flushing or use of tapping equipment with positive purge or "blow-off" features.

A/C Pipe Products: Pressure Pipe
Size Range: All

*Exposure data not currently available. Recommendation based on exposure data for operations believed to be comparable.

Products and Operations

Types of A/C Pipe Products covered by these work practices include:

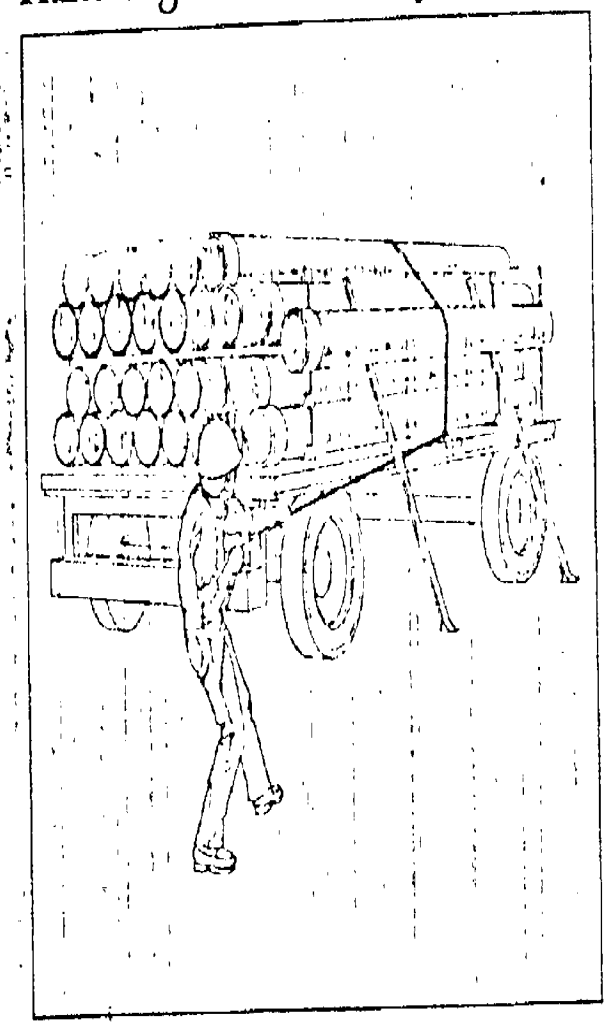
- "Class" Pressure Pipe
- "Transmission" Pressure Pipe
- Pressure Sewer Pipe
- Gravity Sewer Pipe
- Building Sewer Pipe
- Storm Drain Pipe
- Perforated Underdrain Pipe
- Electrical Conduit
- Telephone Duct
- Air Duct

Operations to which these work practices apply include:

- Shipping, Receiving and Handling
- Cutting
- Machining
- Hole Cutting
- Tapping
- Coupling Removal
- Housekeeping and Waste Disposal

L122122

Shipping, Receiving, Handling and Assembly*



A/C pipe is shipped clean from the factory and carefully loaded using methods acceptable to the carrier. Loading, unloading, stringing out and assembling A/C pipe are essentially dust-free operations. Even in enclosed spaces, airborne asbestos fiber levels from pipe handling operations are far below existing and proposed occupational standards.

All hand and mechanical unloading operations should be carried out in accordance with the manufacturer's installation manuals.

A/C Pipe Products: All
Size Range: All

Tapping, Non-Pressure*



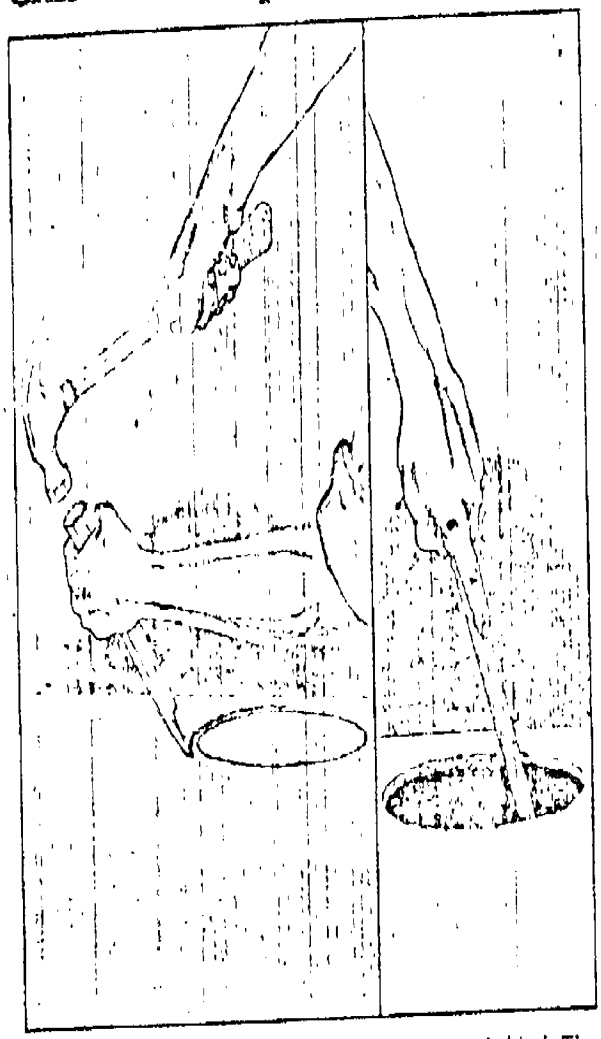
Non-pressure or "dry" tapping for service connections may be performed in or above the trench. The equipment is secured to the pipe by means of a chain yoke. Separate drills and taps or a combination tool drills and taps the pipe wall. Corporation stops or other connections may then be affixed to the pipe.

To minimize (a) the fouling of valves, regulators, meters, etc. with chips and (b) unnecessary addition of asbestos to drinking water, all dust and cuttings should be removed from the pipe interior by flushing with water, wet mopping or vacuuming prior to placing in service. DO NOT BLOW OUT WITH COMPRESSED AIR OR DRY SWEEP.

A/C Pipe Products: Pressure Pipe

F12123

Hole Cutting Chisel and Rasp



Holes may be cut into A/C pipe with a hammer and chisel. The edge of a plumber's wood chisel is used to cut completely around the hole outline, about a ¼" from the prescribed line. The operation is repeated and the cut deepened until through. The edges of the hole are then dressed with a coarse wood rasp.

When cutting holes in A/C pipe products, all dust and cuttings should be removed from the pipe or duct interior after the cutting operation. Removal may be accomplished by flushing with water, wet mopping or vacuuming prior to placing in service. DO NOT BLOW OUT WITH COMPRESSED AIR OR DRY SWEEP.

A/C Pipe Products: Pressure, Gravity and Building Sewer; Air Duct

Size Range: All

Cutting Carbide Blade Equipment

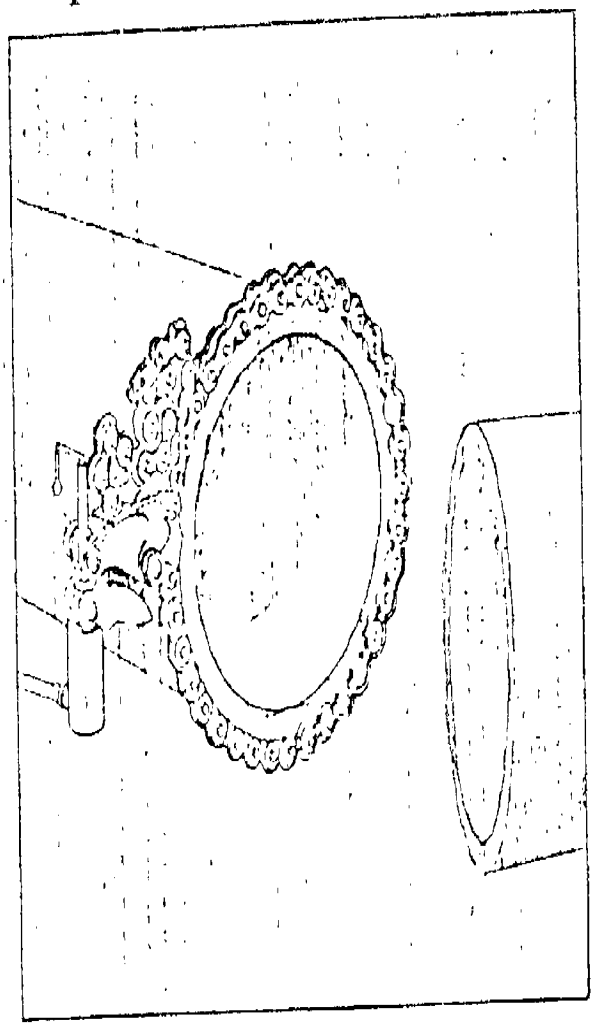


Blade cutters consist of a frame adjustable to the circumference of the pipe and a number of outboard, self-tracking rollers that carry one or more carbide-tipped cutting blades. Blade cutters are typically hand-operated. Due to the relatively low mechanical input and clean cutting action, significant amounts of airborne asbestos dust are not produced.

A/C Pipe Products: All
Size Range: 3" through 24"

L 12124

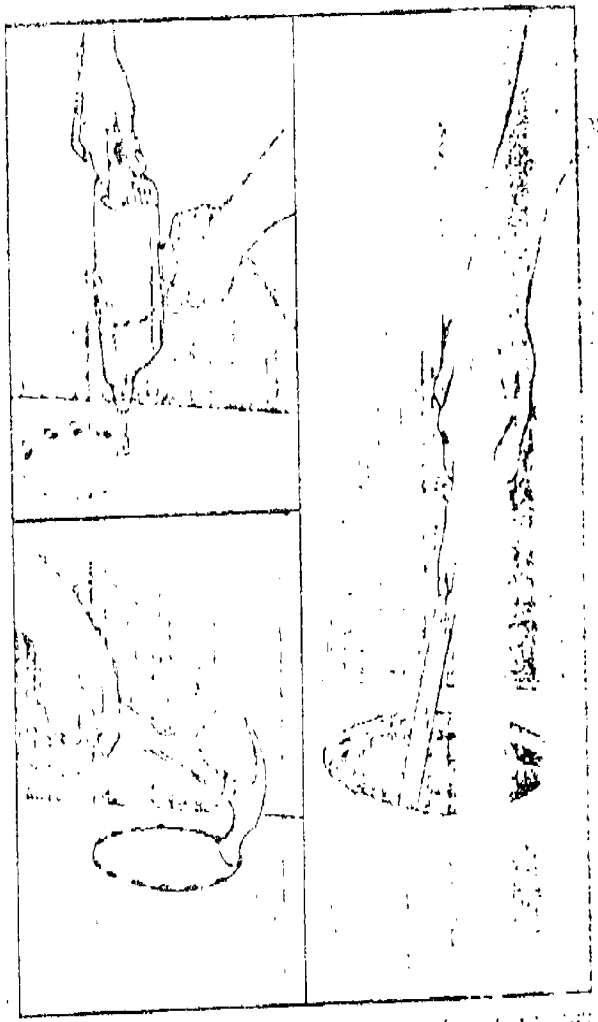
Cutting
Snap Cutting Equipment



Snap cutters or "squeeze and pop" equipment operates by means of cutting wheels mounted in a chain wrapped around the pipe barrel. Hydraulic pressure, applied by means of a remote electric or manually operated pump, simultaneously squeezes the cutting wheels into the pipe wall until the cut is made.

A/C Pipe Products: All
Size Range: Pressure Pipe—3" through 24"
Pressure, Gravity and Building Sewer, Storm Drain; Air, Electrical and Telephone Duct—3" through 36"

Hole Cutting
Drill and Rasp*



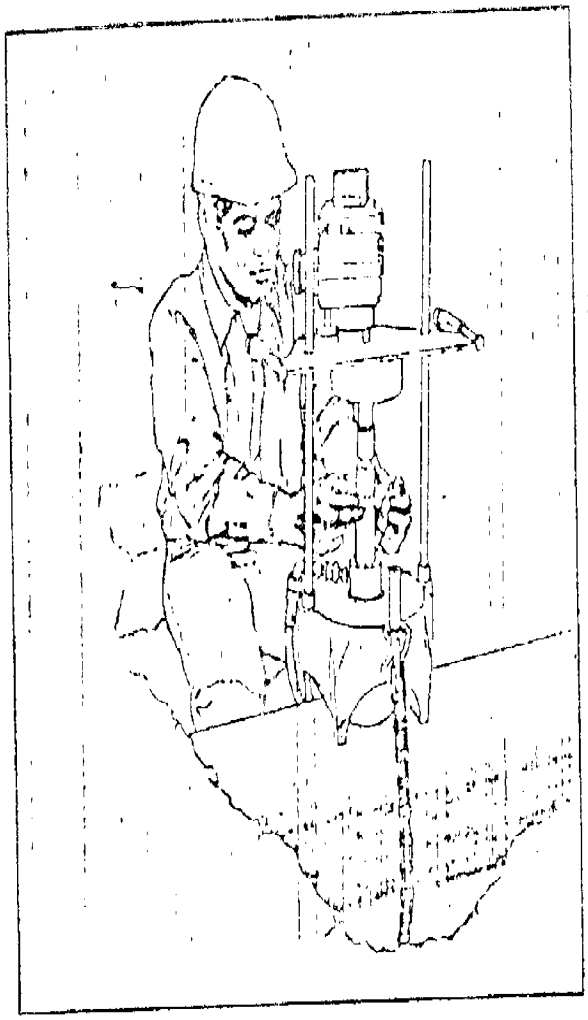
Field connections may be made with a heavy duty electric drill and rasp. Using a carbide-tipped drill, a series of closely-spaced holes are first drilled around the hole outline. The desired knockout is knocked free with a hammer and the edges of the hole are dressed with a coarse wood rasp.

When cutting holes in A/C pipe products, all dust and cuttings should be removed from the pipe or duct interior at the conclusion of the cutting operation. Removal may be accomplished by flushing with water, wet mopping or vacuuming prior to placing in service. DO NOT BLOW OUT WITH COMPRESSED AIR OR USE SWEEPING

A/C Pipe Products: Pressure, Gravity and Building Sewer
Air Duct

Figure 5

Hole Cutting Shell Cutters



For field connections into A/C pipe, clean, even entry cuts may be accomplished by means of shell cutting equipment. Shell cutters consist of a hole cutter housing mounted on the pipe, a carbide or diamond-tipped hole cutter and a manual ratchet, pneumatic, electric or gasoline drive to power the cutting head.

When cutting holes in A/C pipe products, all dust and cuttings should be removed from the pipe or duct interior after the cutting operation. Removal may be accomplished by flushing with water, wet mopping or vacuuming prior to placing in service. DO NOT BLOW OUT WITH COMPRESSED AIR OR DRY SWEEP.

A/C Pipe Products: Pressure, Gravity and Building Sewer; Air Duct

Size Range: All

Machining: Field Lathe–Manual



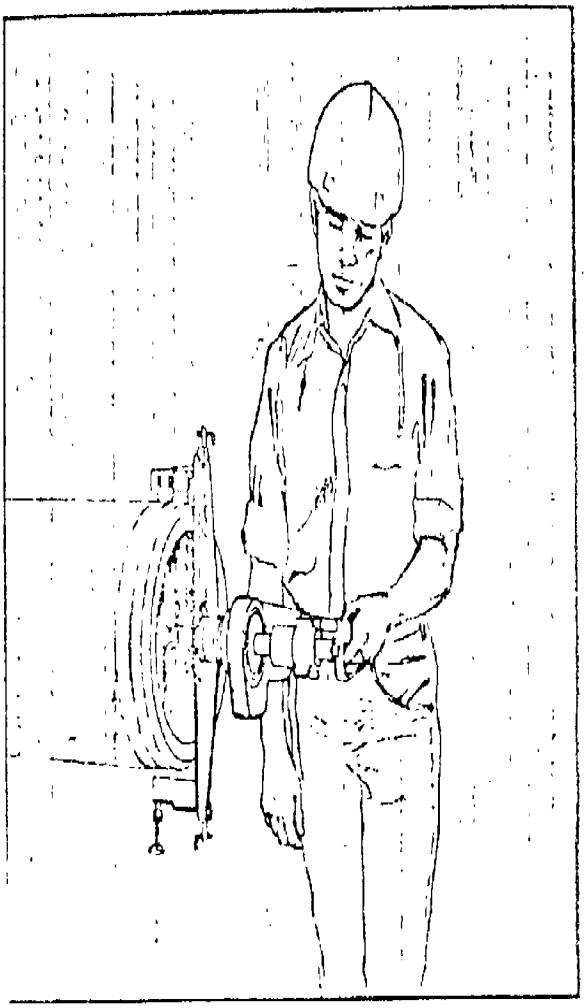
Manual field lathes are designed to end-trim and machine rough pipe barrels to factory-machined end profiles. The lathe consists of an adjustable, self-aligning arbor inserted into the pipe bore (which acts as a mandrel upon which the machining handle operates), a screw-fed turning frame, carbide machining blades and manual (hand or ratchet) turning handles.

A/C Pipe Products: All

Size Range: All

F 12126

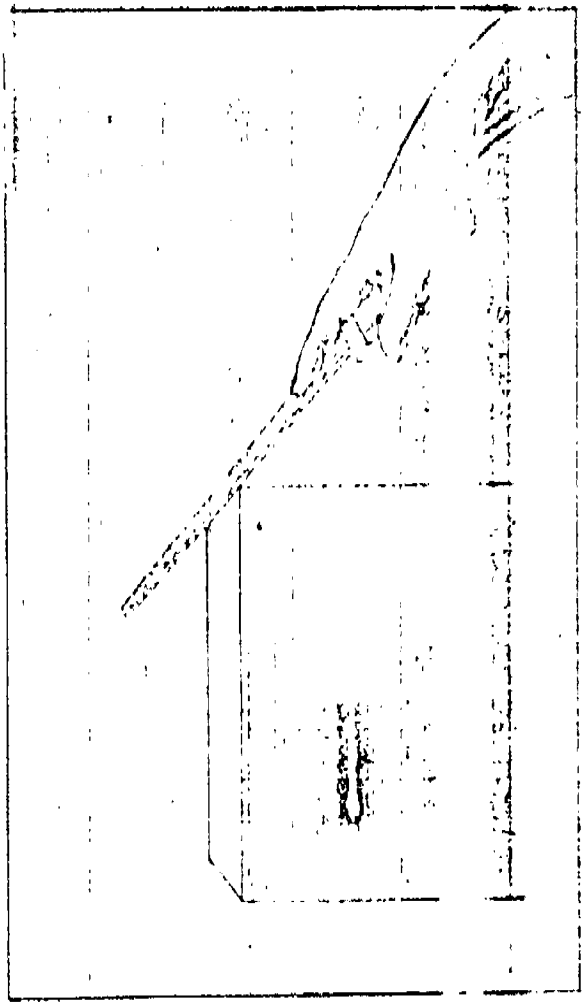
Machining
Field Lathe–Power



Power field lathes, like manual lathes, are designed to end trim and re-machine rough pipe barrels to factory-machined end profiles. The lathe consists of an adjustable, self-aligning arbor inserted into the pipe bore (which acts as a mandrel upon which the turning handle operates), a screw-fed turning frame, carbide machining blades and electric or pneumatic power drive.

A/C Pipe Products: All
Size Range: All

Machining
Rasp–Manual



Short lengths of A/C pipe (MEE's & MOA's) can be cut for closures, repairs and to locate fittings exactly. Field cut ends may be rebeveled with a coarse wood rasp to form a taper approximating the same profile as the factory-beveled end.

A/C Pipe Products: All
Size Range: All

F122127