

M.T.B 8-25-75

Johns-Manville Corporation

Greenwood Plaza
Denver, Colorado 80217

Health, Safety & Environment Department

August 8, 1975

Mr. Peter Doty
Building A-24
Dow Chemical Co.
Midland, Michigan 48620

Dear Mr. Doty:

J. V. Magee has asked me to reply to your telephone inquiry concerning TRANSITE and asbestos fiber. Products such as TRANSITE sheet or pipe presently cannot be made without asbestos fiber. Experiments have been made using fiber glass as a substitute for asbestos. Fiber glass, however, is not alkali resistant and is attacked by the cement with a subsequent loss in product strength.

Routine handling and installation of asbestos-cement sheets normally will not generate airborne fibers approaching the limits established by the OSHA asbestos standards. Fabrication of the sheet by power sawing utilizing either fixed or portable saws can generate fiber concentrations above the allowable. However, this exposure can readily be controlled by the installation of mechanical exhaust ventilation equipment on the fabricating machinery.

The Asbestos Information Association/NA is preparing a series of recommended work practice brochures for asbestos-containing products. One of these is entitled, "Recommended Work Practices - Shop and Field Fabrication of Asbestos Sheet Products". For your information I enclose a draft of this brochure. I must emphasize that this is only a draft and may contain some minor typographical or other errors but the basic information is correct.

If after reading the enclosure you still have questions concerning the handling of TRANSITE products, please contact me in Denver.

Very truly yours,

Edmund M. Fenner

Edmund M. Fenner, Director
Technical Affairs

PLAINTIFF'S EXHIBIT

DOW-1357

INSTA-MAX Pkt. Prod.

ST0001135

PLF EX 8



ASBESTOS INFORMATION ASSOCIATION

1660 L Street, N.W. / Washington, D.C. 20036 / (202) 223-4885

RECOMMENDED WORK PRACTICES

SHOP AND FIELD FABRICATION

OF

ASBESTOS SHEET PRODUCTS

ST0001136

DRAFT
1/3/75

Revised 5/1/75
8/8/75

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INTRODUCTION

The Occupational Safety and Health Act was signed into law on December 29, 1970 and became effective on April 28, 1971. The Act has the stated objective of assuring every American worker a safe and healthy workplace.

On December 7, 1971 the Secretary of Labor issued an emergency-temporary standard for exposure to asbestos dust. As required by the Act, a permanent standard for asbestos exposure was promulgated six months later on June 7, 1972. The present OSHA Asbestos Standard, discussed in this booklet, became effective on July 7, 1972.

The work practices on the following pages have been prepared by the Standards and Technical Committee of the Asbestos Information Association/North America. They are intended as general guidance for safe and clean workplace conditions in keeping with the spirit and intent of the OSHA Standard for Occupational Exposure to Asbestos Dust.

These practices have been developed through careful study and consultation and are recommended as good procedure. It is recognized that manufacturing conditions vary. Implementation of the practices contained herein cannot be considered as a guarantee of OSHA compliance. Where there may be a question of compliance, OSHA personnel should be consulted.

Thorough understanding of the OSHA Asbestos Standard is important to management of any company utilizing asbestos in its manufacturing or processing operations. Revisions or amendments to the standard which may occur will be published as a matter of course in the Federal Register. This publication will be revised, as necessary, to reflect changes that may occur.

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PRODUCTS AND OPERATIONS

Types of asbestos sheet products covered by these work practices are:

Flat asbestos-cement sheets - plain and pigmented - press produced

Corrugated asbestos-cement sheets - press produced

Flat asbestos-cement sheets - plain and pigmented - wet machine produced

Corrugated asbestos cement sheets - wet machine produced

Asbestos-cement sheets and shapes - extruded

Flat asbestos calcium silicate sheets - press produced

Structural sandwich panels - flat asbestos-cement sheets with insulating core.

Operations to which these work practices may apply are:

Handling and warehousing

Drilling

General housekeeping, including waste disposal

Shaping

Sawing

Sanding

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SUMMARY OF THE REQUIREMENTS OF THE OSHA ASBESTOS STANDARD
(1910.93a)

General Comments

After extensive public hearings, OSHA published a "Standard for Exposure to Asbestos Dust" in the Federal Register, Volume 37, No. 110 dated Wednesday, June 7, 1972. A copy of the complete standard is included at the back of this booklet. It applies to any manufacturing, fabricating or handling process or operation utilizing asbestos fiber or materials containing asbestos fiber.

The standard is divided into eight major categories:

1. 1910.93a(b) Exposure Levels

Sets the maximum allowable asbestos fiber concentration in the workplace air.

2. 1910.93a(c) Methods of Compliance

Recommends procedures to meet the exposure levels.

3. 1910.93a(d) Personal Protective Equipment

Specifies types of personal protective equipment and defines the circumstances under which they are required.

4. 1910.93a(e) Method of Measurement
1910.93a(f) Monitoring

Specifies the monitoring procedures to be used to determine if your workplaces meet the allowable exposure levels.

5. 1910.93a(g) Caution Signs and Labels

States when caution signs and labels are required, and the wording to be used.

6. 1910.93a(h) Housekeeping

Specifies results to be obtained from housekeeping and the methods of waste disposal.

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7. 1910.93a(i) Recordkeeping

Sets type and duration of monitoring recordkeeping. Sets requirements for employee notification of monitoring results.

8. 1910.93a(j) Medical Examinations

Details the requirements for medical examinations.

Specific Comments

1. Exposure Levels [1910.93a(b)]

It is the employer's responsibility to assure that exposure of employees to airborne concentrations of asbestos fibers does not exceed the levels prescribed by the Standard.

The OSHA asbestos standard maximum permissible levels of asbestos fiber in the workplace air are:

a. Eight hour time weighted average:

- (1) At present: 5 fibers per cubic centimeter.
- (2) Effective July 1, 1976: 2 fibers per cubic centimeter.

b. Ceiling concentration:

- (1) At present: 10 fibers per cubic centimeter.
- (2) Effective July 1, 1976: (no change).

In both cases, the standard refers to fibers longer than 5 micrometers.

2. Methods of Compliance [1910.93a(c)]

Engineering Methods

Engineering controls such as isolation, enclosure, exhaust ventilation and dust collection shall be used to meet the prescribed exposure levels.

All hand operated and power operated tools which may produce airborne asbestos fibers in excess of permissible exposure levels shall be provided with local exhaust systems.

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Wet Methods

When practicable, asbestos products shall be handled in a wet state sufficient to prevent the emission of dust to the atmosphere. This procedure is not required where the usefulness of the product might be diminished by wetting. The applicability of wet methods is limited. In most situations, engineering controls as noted above are more applicable.

3. Personal Protective Equipment and Clothing [1910.93a(d)]

Respiratory Protection

Respiratory protection is required whenever the airborne concentrations of asbestos fiber exceed either the permissible time weighted average level or permissible ceiling concentration. The type of respirator to be used is determined by the fiber concentration in the workplace.

- a. Fiber concentrations up to, but not exceeding 10 times the allowable limit:

Air purifying respirator - reusable or single use.

- b. Fiber concentrations up to, but not exceeding 100 times the allowable limit:

Powered air purifying respirator.

- c. Fiber concentrations exceeding 100 times the allowable limit:

Type "C" supplied air respirator.

Protective Clothing

Whenever the airborne fiber concentrations exceed the prescribed ceiling level the employer shall provide and require the use of special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings.

Whenever the airborne fiber concentrations exceed either the permissible time weight average concentration or permissible ceiling concentration the employer shall provide change rooms for his employees. The change rooms shall be equipped with two separate lockers or containers for each employee so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

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4. Methods of Measurement [1910.93a(e)]Monitoring [1910.93a(f)]

All monitoring shall be done by the membrane filter method at 400-500 x-(magnification) (4 millimeter objective) with phase contrast illumination.

The standard requires that within six months of its effective date, all workplaces where asbestos fibers are released shall be monitored to determine exposure levels. Monitoring must be repeated at six month intervals if the fiber concentrations are above permissible levels. If fiber concentrations are below permissible levels, monitoring should be repeated at reasonable intervals at the employer's discretion.

Affected employees or their representatives shall be given a reasonable opportunity to observe any required monitoring and shall have access to the monitoring records.

Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the prescribed limits shall be notified in writing of the exposure as soon as practicable but not later than five days of the finding.

5. Caution Signs and Labels [1910.93a(g)]

Caution signs shall be displayed at each workplace where asbestos fiber concentrations exceed permissible exposure levels.

Caution labels shall be applied to all materials and products which during any reasonably foreseeable use might release concentrations of asbestos fibers in excess of permissible exposure levels.

6. Housekeeping [1910.93a(h)]

All external surfaces, machinery and equipment shall be maintained free of asbestos fiber accumulations that might, if dispersed, create asbestos fiber concentrations above permissible exposure levels.

For recommendations on proper housekeeping procedures, see the "Housekeeping" section under general recommendations.

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7. Recordkeeping [1910.93a(i)]

Every employer shall maintain records of any personal or environmental monitoring required by the standard. Records shall be maintained for a period of at least three years.

8. Medical Examinations [1910.93a(j)]

Preplacement, annual, and termination medical examinations must be provided or made available by the employer for any employee "...engaged in occupations exposed to airborne concentrations of asbestos fibers." These medical records must be kept for 20 years and are available to the employee's physician.

This section has proved to be one of the most confusing in the regulations since it does not define any cutoff level below which examinations are not required. It is anticipated that the revised regulations will provide a more specific definition such as that originally proposed by NIOSH in the Criteria Document:

"For purposes of this requirement the term 'exposed to asbestos' will be interpreted as referring to time-weighted average exposures above 1 fiber/cc or peak exposures above 5 fibers/cc."

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GENERAL RECOMMENDATIONS

Exhaust and Dust Collection Systems

The OSHA Asbestos Standard requires that exhaust and dust collection systems be designed and maintained in accordance with American National Standard*, "Fundamentals Governing the Design and Operation of Local Exhaust Systems", ANSI Z9.2-1971. Another authoritative reference is:

Industrial Ventilation, A Manual of Recommended Practice

Prepared by:

Committee on Industrial Ventilation

American Conference of Governmental Industrial Hygienists

P. O. Box 453

Lansing, Michigan 48902

The U. S. Environmental Protection Agency requires that the air cleaning device used with asbestos fiber dust collection systems be a fabric filter collector. When the use of fabric filters creates a fire or explosion hazard, the Administrator of the Agency may authorize the use of a high energy wet collector.

For small and intermittent production and fabrication operations major dust collection systems of the high volume, low velocity type design described in the references above may not be necessary. Instead, systems of the low volume, high velocity type utilizing as their exhaust air source a high efficiency vacuum cleaner could be suitable. For design information on these systems refer to the "AIA/NA Recommended Work Practices on Fabrication of Asbestos-Containing Sheet Products" - which may be obtained on request to the AIA/NA.

All exhaust and dust collection systems should be inspected periodically for proper functioning. For continuous operations it is recommended that the system operation and the interior of the baghouse be checked daily. A scheduled maintenance program that includes bag replacement should be prepared and followed.

American National Standards Institute
1430 Broadway
New York, NY 10018

ST0001145

Wherever possible, operations involving asbestos-containing materials should be isolated from other work areas by partitions, curtains or other means. If central exhaust systems are utilized the work areas should be maintained under a slight negative pressure.

Housekeeping

Housekeeping is an essential part of any manufacturing operation. It is even more essential in an asbestos-using plant because airborne dust created by lack of housekeeping has the potential for harm to your employee.

The OSHA asbestos standard stipulates that "all external surfaces in any place of employment shall be maintained free of accumulations of asbestos fiber if, with their dispersion, there would be an excessive concentration".

It is recommended that surface cleaning be done by vacuum. Portable vacuum cleaning units should be equipped with internal filtration and disposable dust bags. Single or multi-hose stationary vacuum cleaning systems designed for use with asbestos containing dusts are available from at least two manufacturers. Vacuum cleaning stations can be added to existing dust collection systems as shown on sketch 1 in the appendix.

If circumstances require floor sweeping with brooms, then the loose material being swept should be treated with water or other dust suppressant.

The OSHA standard requires that asbestos waste which when handled or transported could generate airborne fibers in excess of the allowable exposure limits, be disposed of in sealed bags or closed containers.

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PERSONAL HYGIENE

In the use of asbestos for the processing of asbestos-containing products unless good procedures are followed dust conditions can result. Employees must be aware that excessive inhalation of asbestos dust may be injurious to health. Every effort should be made to eliminate dust conditions and avoid unnecessary exposure to dust.

Good personal hygiene practices are important in every working situation. When working with asbestos, workers are urged to observe the following personal hygiene practices for their own health protection, their families and those with whom they work:

- . Avoid cigarette smoking
- . Wash thoroughly before eating
- . Shower after work
- . Wear proper protective clothing including head covering when the situation warrants
- . Change to work clothes upon arrival at work and change from work clothes at conclusion of work
- . If work clothing is taken home, carry in a bag and wash separately from other clothing. Never shake dusty clothing. Use a washing machine.
- . Use respirators when required. Be sure that respirators fit properly.

It makes good sense to have a dust free workplace. It is important to the health of all involved. Dust conditions can be controlled by the simple application of good practices and common sense in the workplace.

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RECOMMENDED WORK PRACTICES
SHOP AND FIELD FABRICATION
OF
ASBESTOS SHEET PRODUCTS

SPECIFIC RECOMMENDATIONS - COMMENTS

Prior to handling of sheet materials excess dust should be removed from the surface of the sheets to prevent dispersion of asbestos fiber into the workplace.

Fabricating machinery should be equipped with suitable dust control systems. Refer to standards on page 6 and to typical designs shown on pages 10 through 37.

All dust control systems which discharge exhaust air to atmosphere must be equipped with fabric filter collection devices (requirement of the Federal Environmental Protection Agency "National Emission Standards for Hazardous Air Pollutants Asbestos").

Wet fabricating methods can be a suitable alternative to dust control systems utilizing exhaust ventilation.

After fabricating and before shipping all excess dust and chips should be removed from the surface of the sheet to prevent dust contamination of the fabricator's workplace and his customer's workplace.

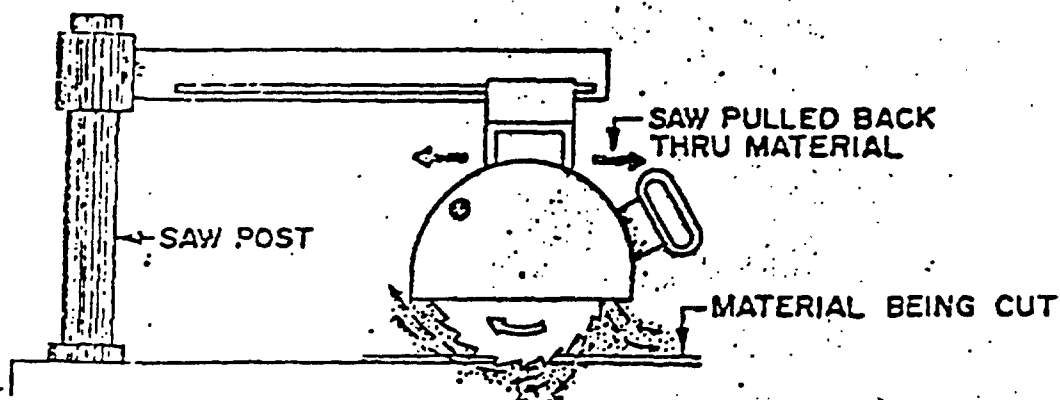
All dust and waste must be disposed of in accordance with paragraph "Housekeeping" on Page 5. Dust from the dust collection devices must be disposed of in sealed containers. Scrap disposal, since it is not friable and disposal does not generate asbestos fiber concentrations above permissible levels, need not follow the requirement for sealed and labeled containers.

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SHOP (FIXED) TOOLS

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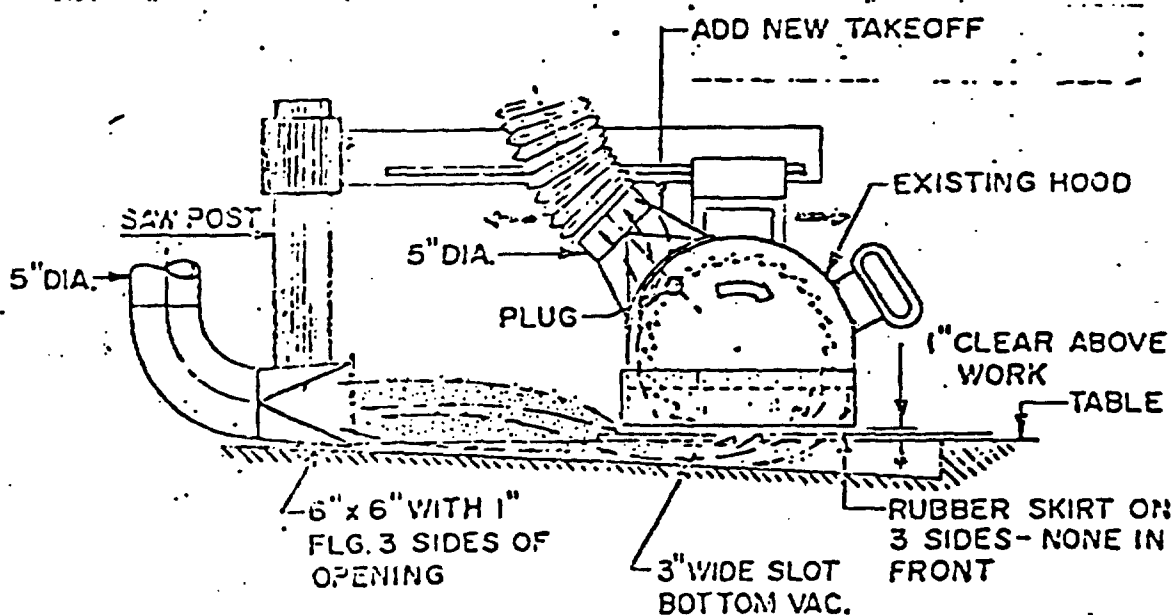
RADIAL ARM SAW:



1. Dust escapes from top side of material as saw breaks through top surface - some goes to saw post area, some goes around top guard and out towards operator.
2. Dust escapes from bottom surface as saw breaks through and goes below table top.

ST0001150

Recommended engineered dust control system.



AIR VOLUME = 2500 C.F.M. TOTAL
 SUCTION = 14\" WATER OR 1\" Hg

TABLE SAW

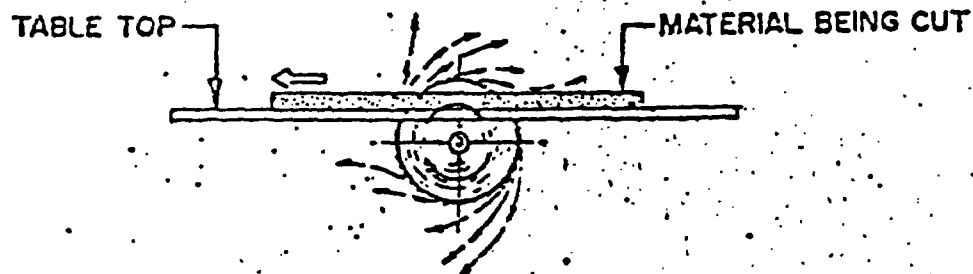
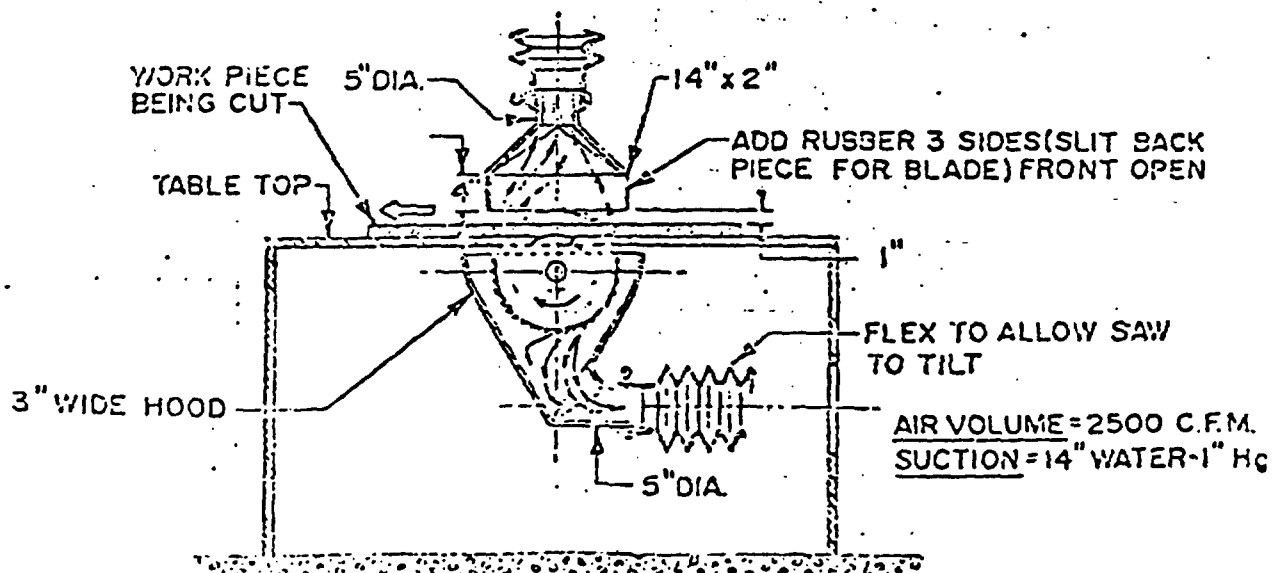


Table saws generate dust as follows:

1. Dust escapes from bottom side as leading edge of material engages downward moving saw teeth. Dust is propelled downward and towards back of saw below table top.
2. Some dust generated over top of material cut due to rubbing of saw or binding in saw cut. Dust rises over saw and towards operator.

Recommended engineered dust control system.

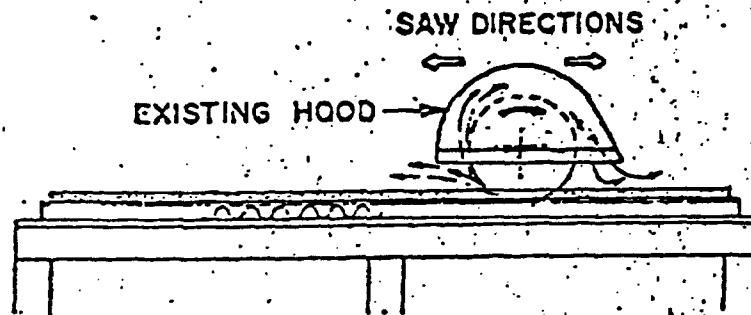


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STONE SAW: - DRY CUTTING:

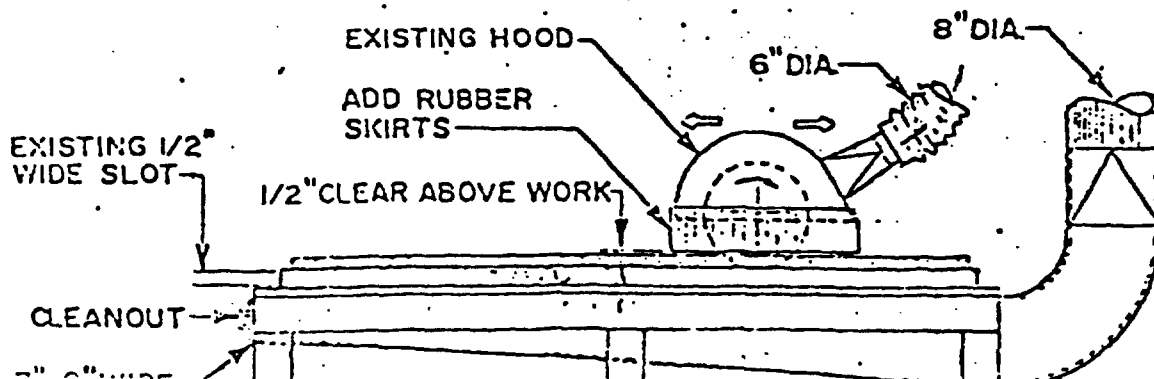
Stone saws when used dry cutting asbestos sheet products generate dust as follows:

1. On the leading edge of the wheel as it breaks through the top surface.
2. On the back edge of the hood which emits dust and chips carried over.



Recommended engineered dust control system.

1. Add rubber skirt on existing hood to $\frac{1}{2}$ inch above work.
2. Add 6" pipe to existing hood for dust pick-up.
3. Add 8" wide slot below table for dust pick-up.
4. Use 2500 to 4000 C.F.M. at 14" water on 1" Hg. for vacuum pick-up.

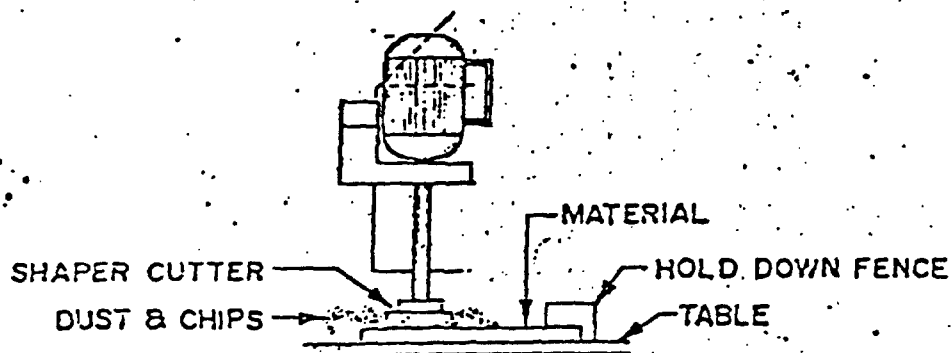


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SHAPER - FOR DRY SHAPING:

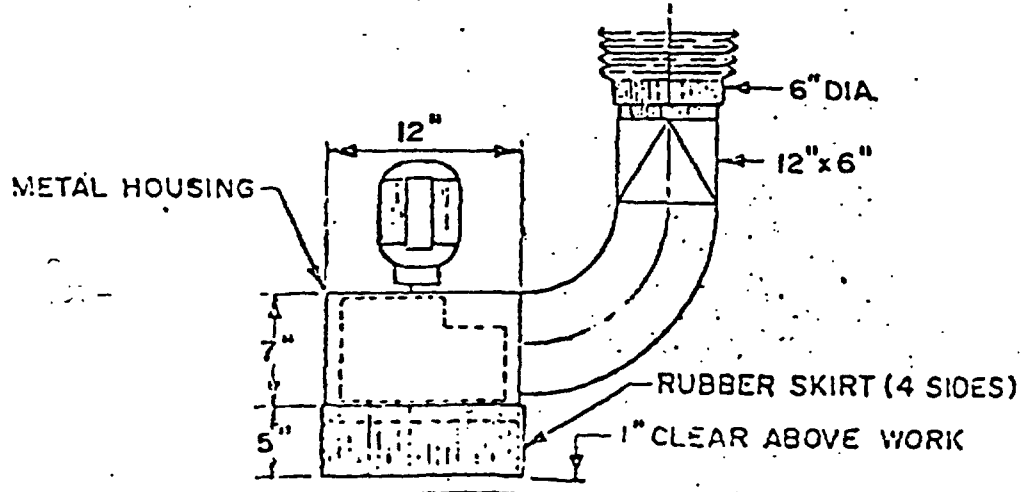
A shaper when shaping or contouring an asbestos sheet product generates dust as follows:

1. The cutter blade on the shaper peels off a very fine chip due to the high velocity of the shaper.
2. The vibration in the cutter shaft or the chatter in the material being shaped generates dust.



Recommended engineered dust control systems and equipment.

1. Enclose shaper shaft and tool in metal housing.
2. Add rubber skirt on 4 sides to 1" clear above work.
3. Add duct work as shown on sketch. Vacuum required is 2500 C.F.M. at 14" water or 1" HG.
4. Use 2" outlet and hose to canister type vacuum 75 C.F.M. at 68" water for 5" Hg.



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ENGINEERED DUST CONTROL TOOLS-SHOP TOOLS

VACUUM REQUIREMENTS

<u>TYPE TOOL</u>	<u>C.F.M.</u>	<u>VACUUM</u>
RADIAL ARM SAW	2500	14" Water
TABLE SAW	2500	14" Water
STONE SAW	2500 to 4000	14" Water
SHAPER	2500	14" Water

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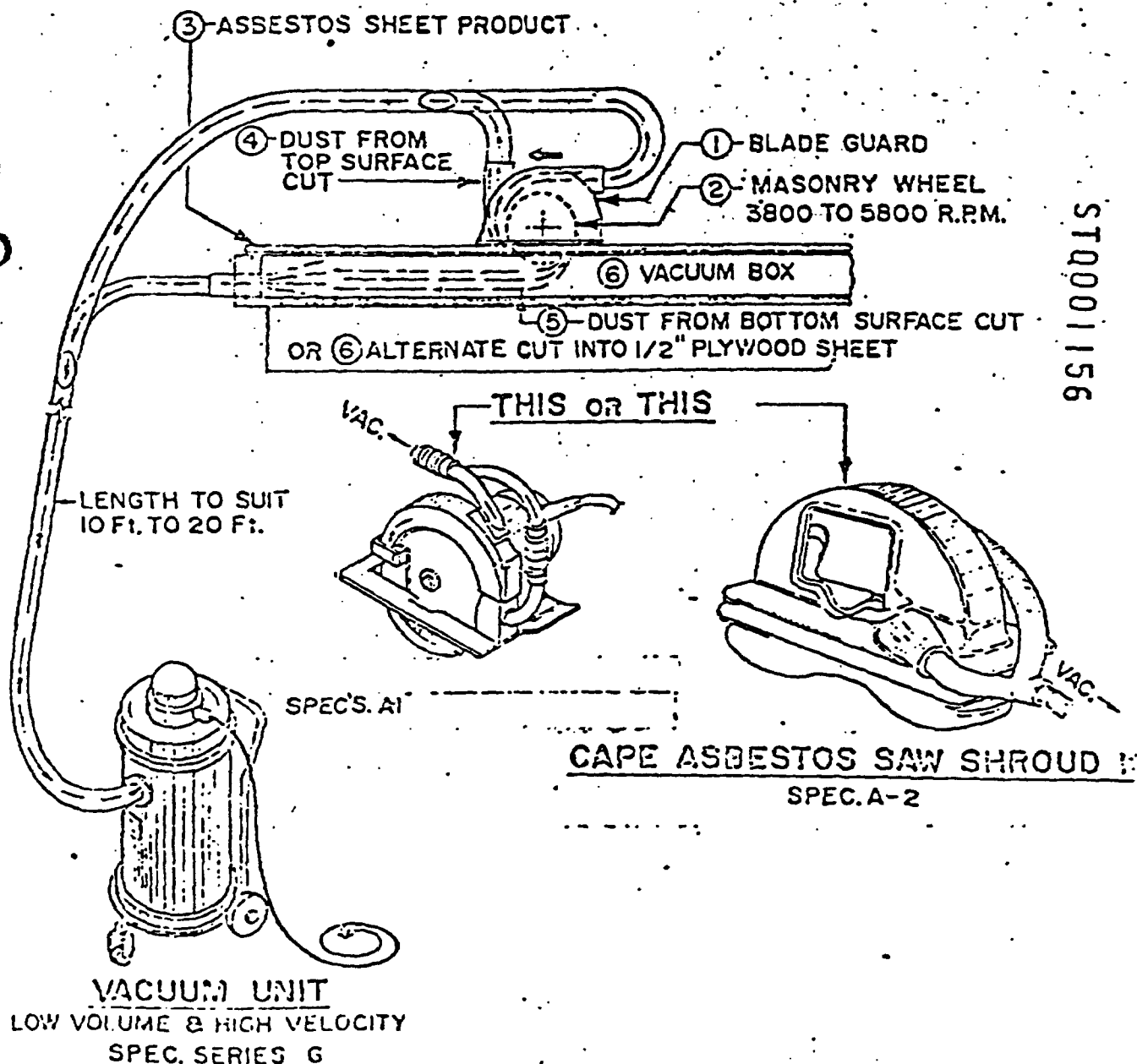
PORTABLE TOOLS

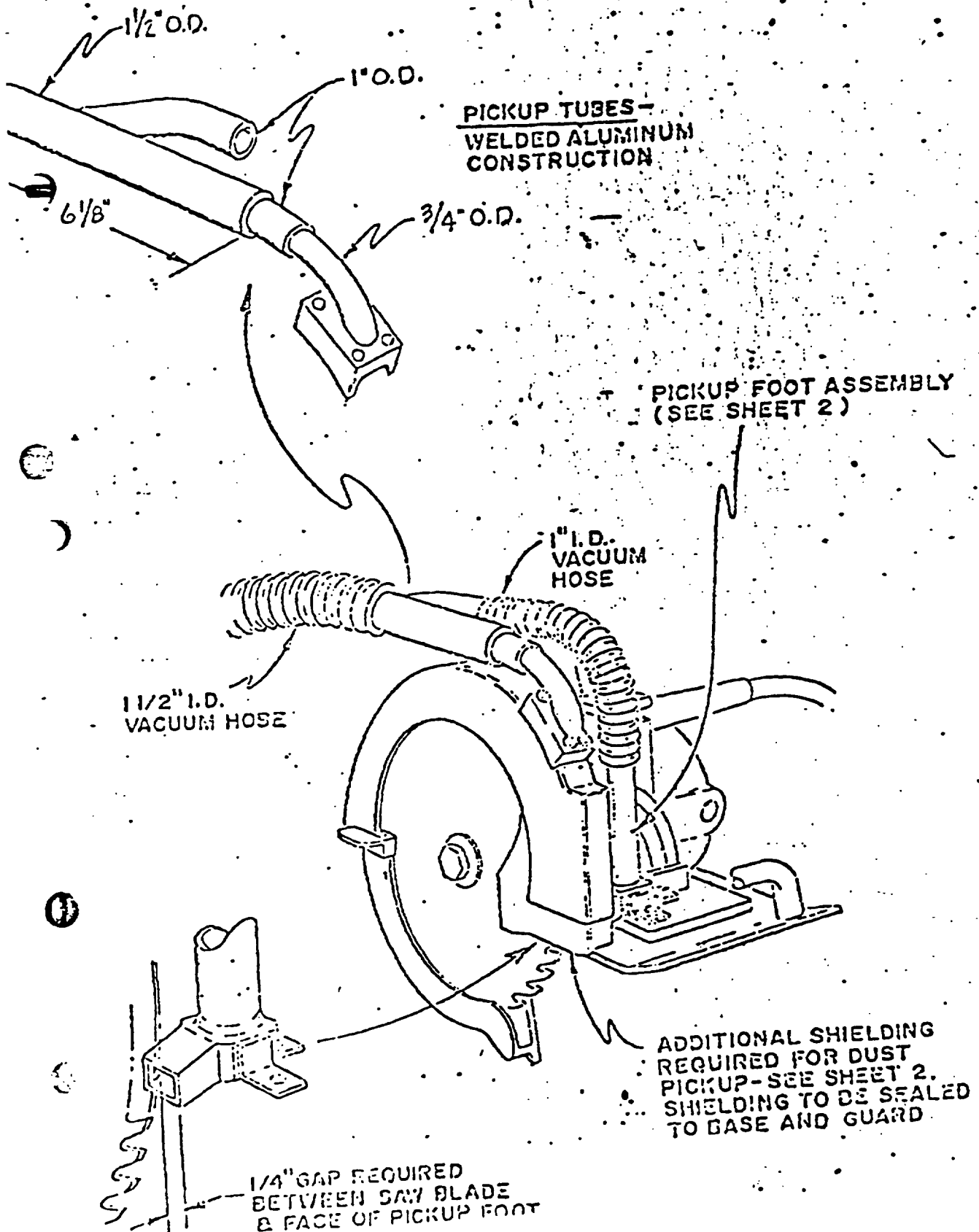
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METHODS OF ENGINEERED DUST CONTROL SYSTEMS

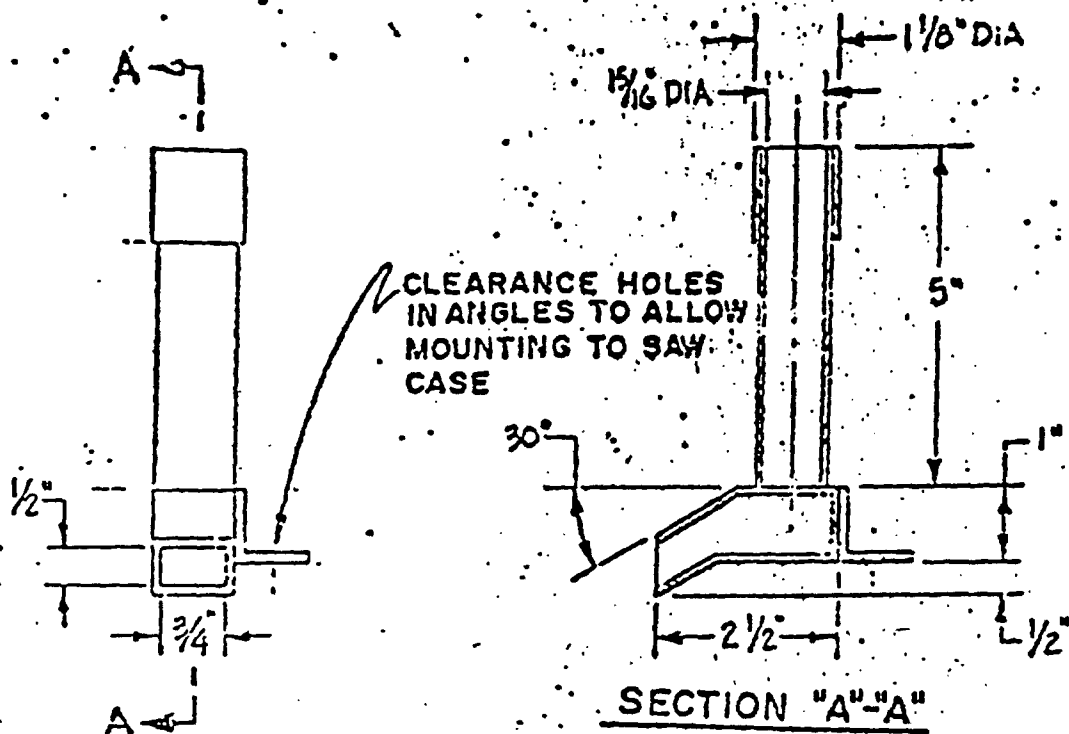
PORTABLE ELECTRIC ROTARY POWER SAWS.

- I. Use dust control systems shown below. (Spec. A-1) or Cape Asbestos shroud kit. (Spec. A-2)
- II. Do all cutting on J-M design vacuum box (6) as per Spec. No. E-1, or cut into 1/2" plywood.



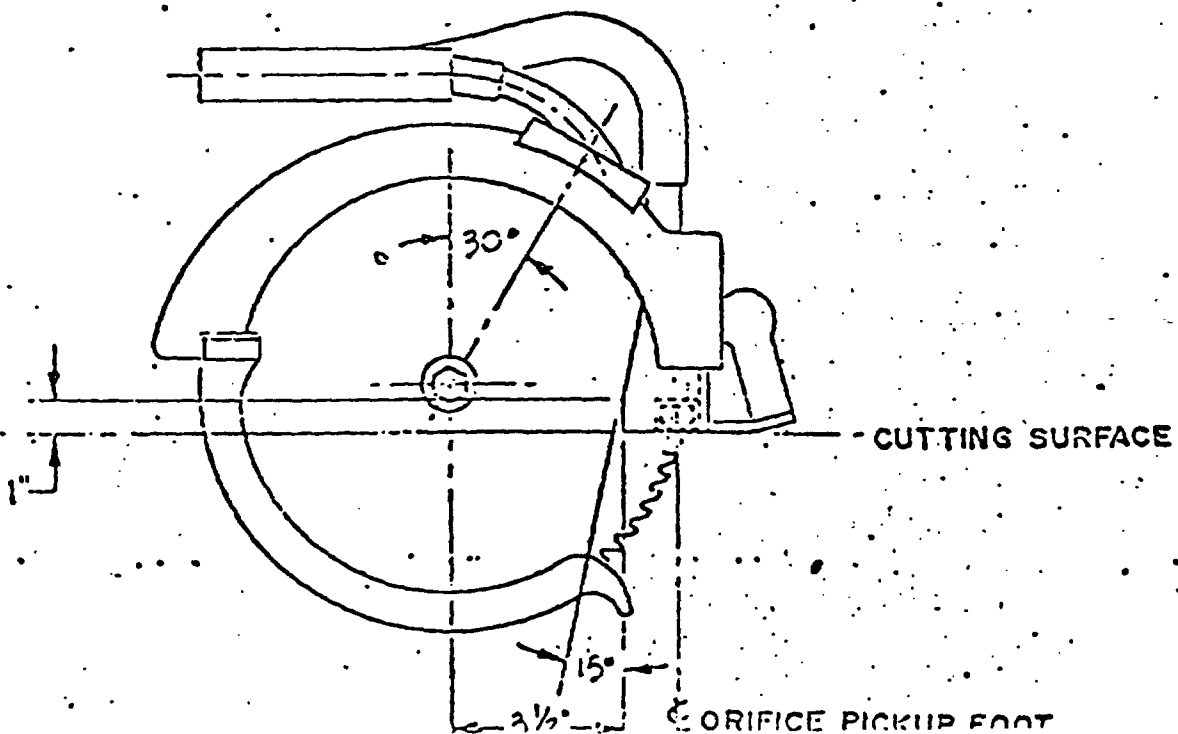


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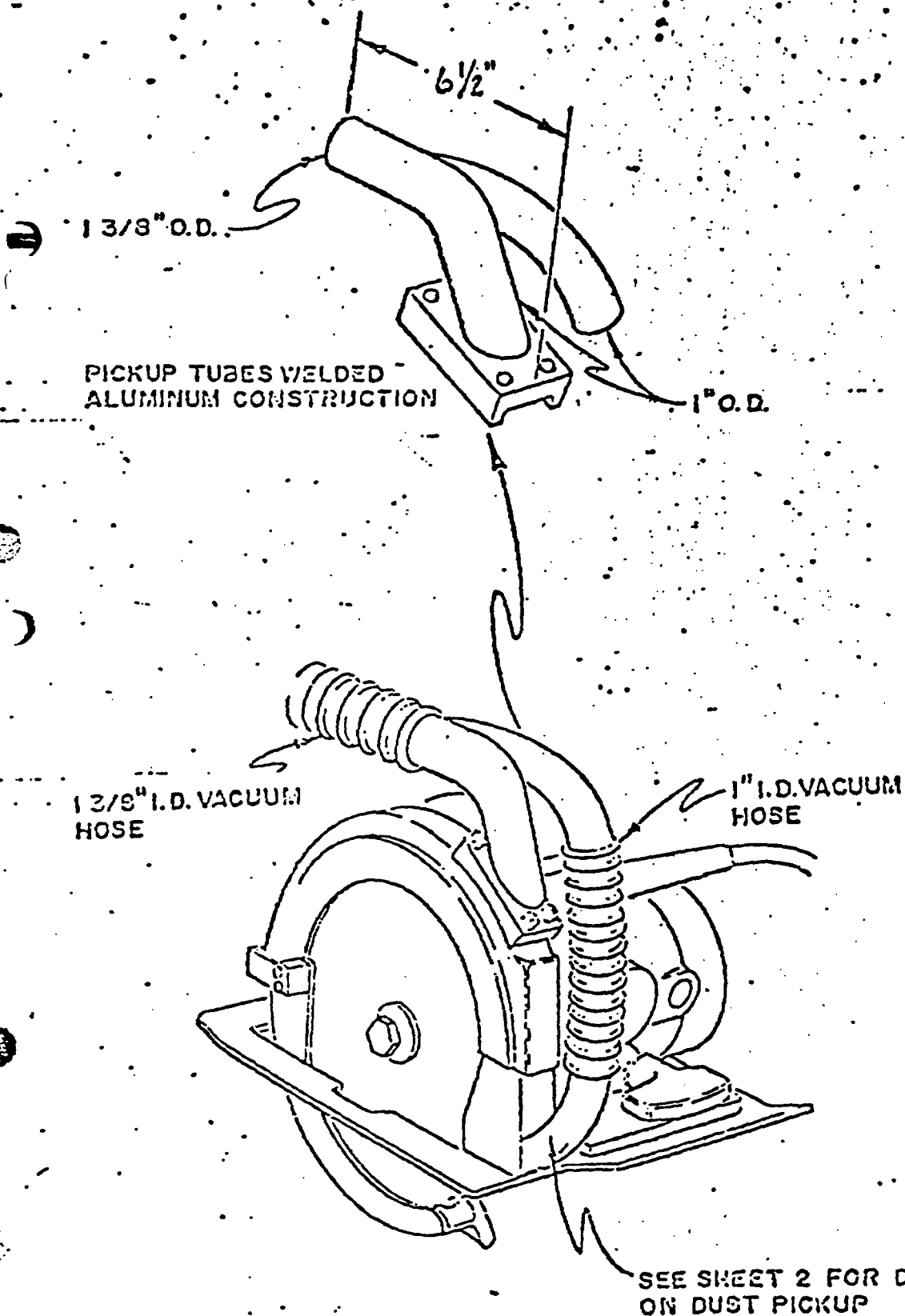


PICKUP FOOT-WELDED ALUMINUM CONSTRUCTION

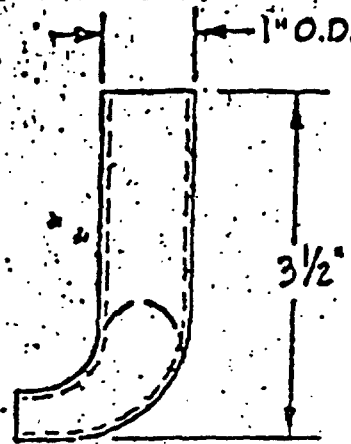
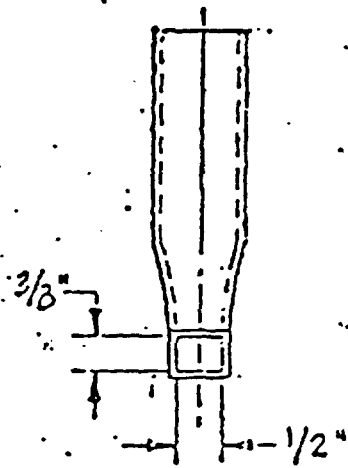
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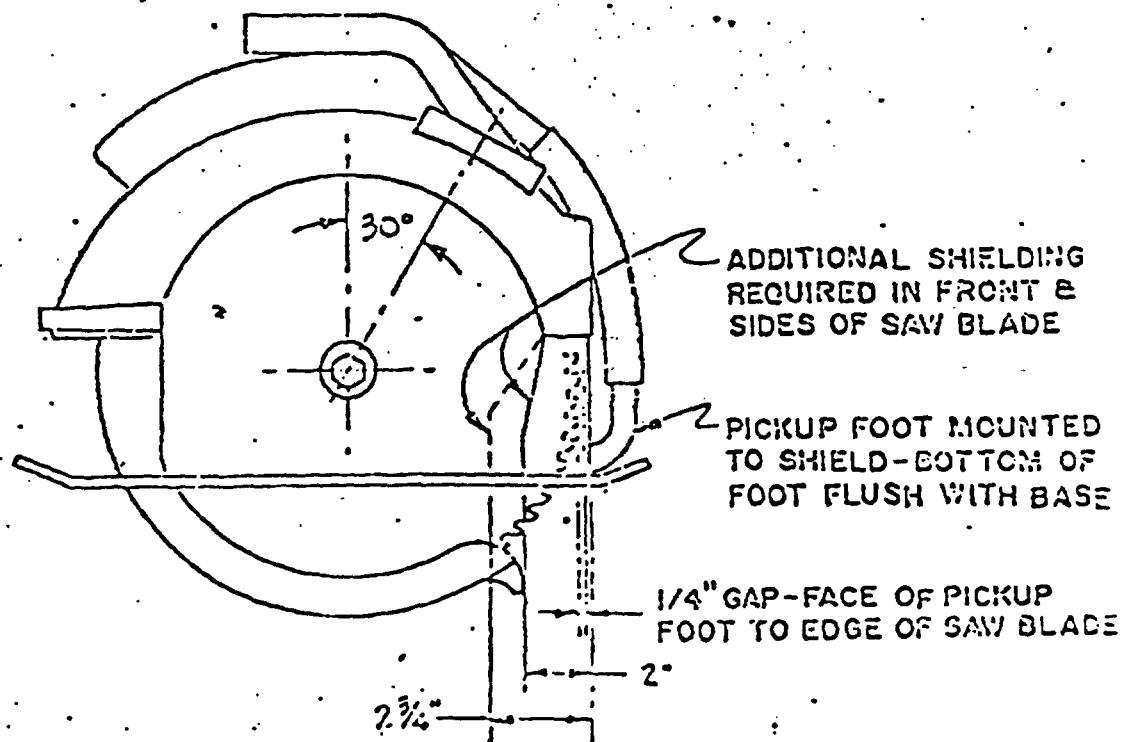


PICKUP FOOT
SAW BLADE



PICKUP FOOT-WELDED TO SHIELDING

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SPECIFICATION NO. A-2

DETAIL 1

MANUFACTURER:

Cape Universal Building Products
Uxbridge, Middlesex England or (Watford 34551)
Register Office Box 165, Exchange Road, Waterford 34551

TYPE OF EQUIPMENT:

Plastisol Type Semi-Flexible
Portable Saw Special Design Shroud Kit

7" for 7½" Sawcats

9½" for 9½" Sawcats

Stocked in Denver by M. L. Foss, Black & Decker distributor.

EQUIPMENT SPECIFICATIONS:

Order through Cape Universal (includes following)

1. Shroud
2. Hose harness, comprising 2 hose pieces and "Y"
3. Jubilee clips (2)

SIZES: For 7½" and 9½" Sawcats

ELECTRICAL: -NONE-

VACUUM:

2 hose pieces for vacuum attachments

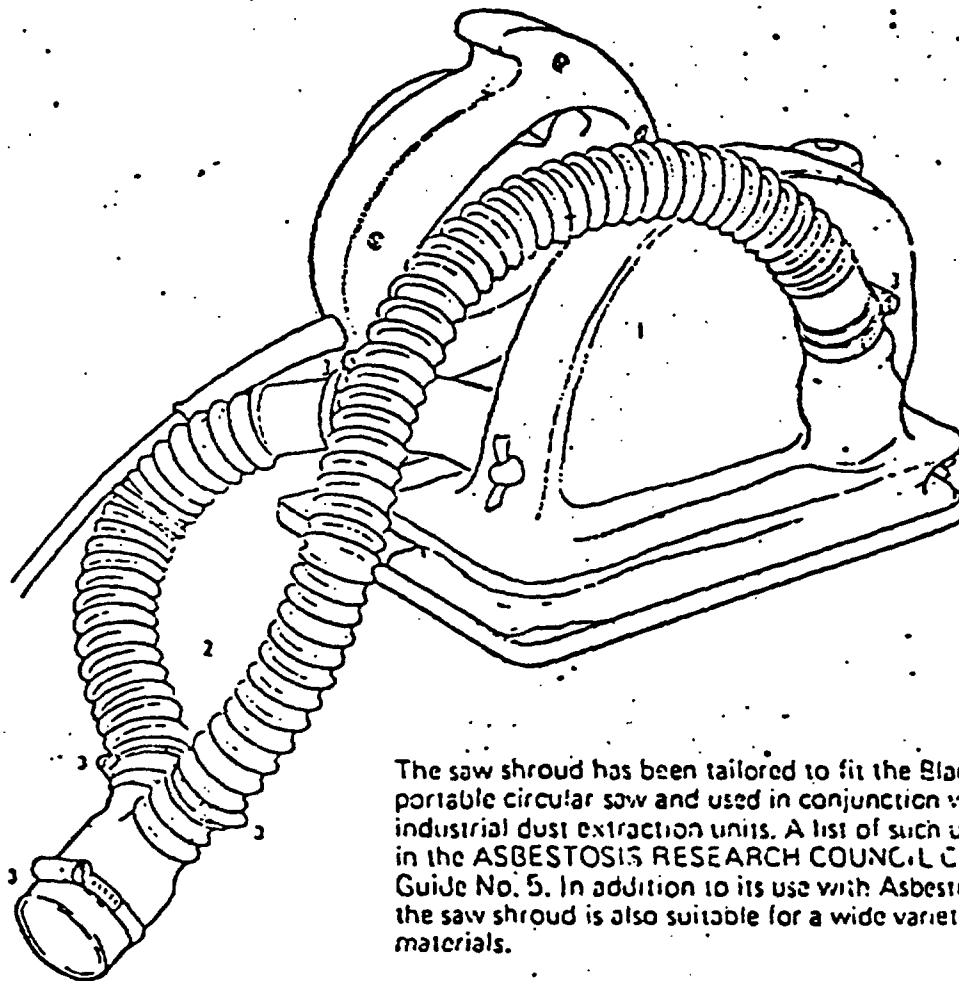
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Cape Universal

SPEC. A-2
DETAIL 2

Dust extraction shroud kit for the HD1215 portable saw

Approved by the Asbestosis Research Council



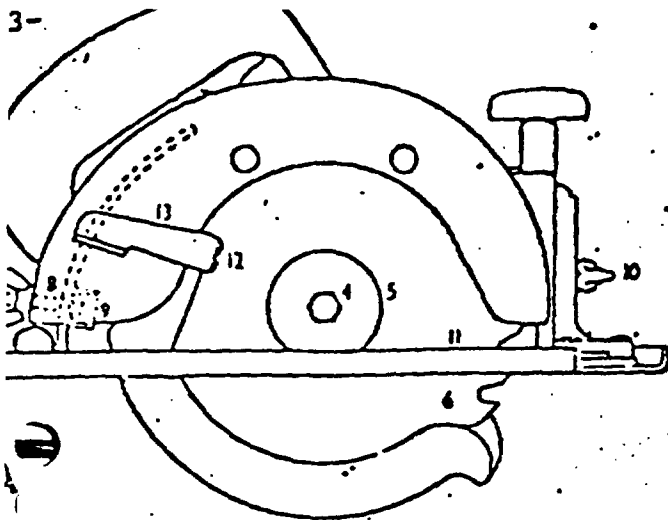
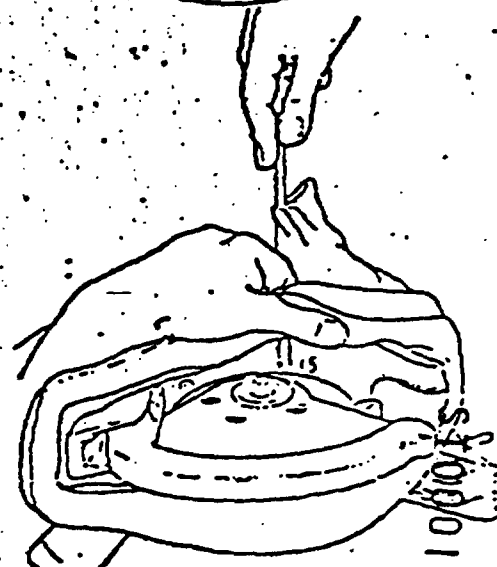
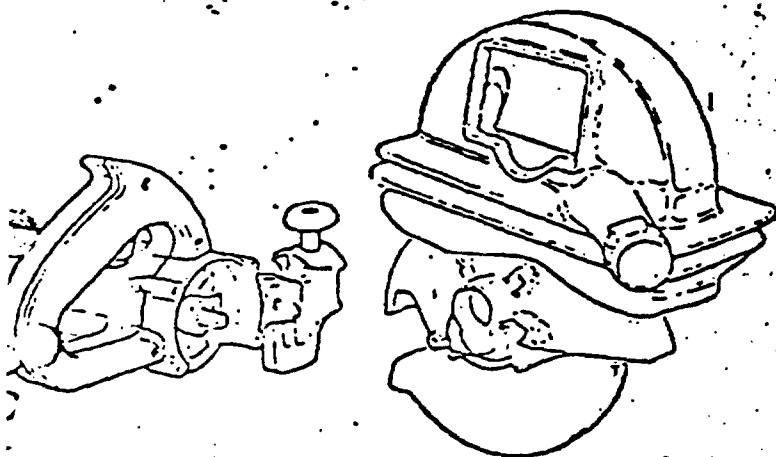
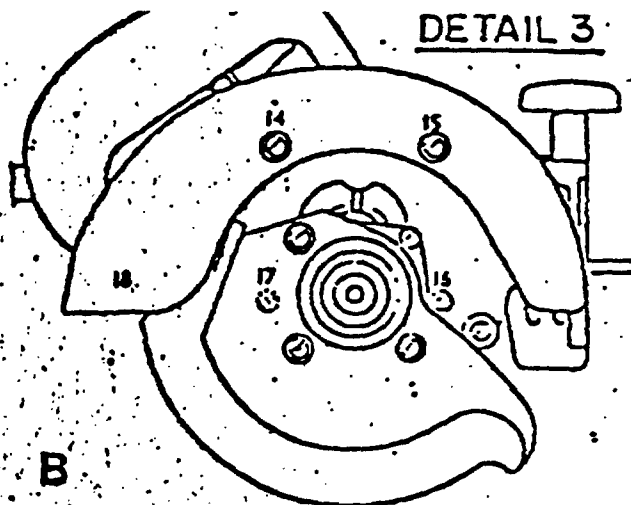
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The saw shroud has been tailored to fit the Black and Decker 2 1/2" portable circular saw and used in conjunction with appropriate industrial dust extraction units. A list of such units is included in the ASBESTOSIS RESEARCH COUNCIL Control and Safety Guide No. 5. In addition to its use with Asbestos based materials the saw shroud is also suitable for a wide variety of other materials.

Operating
instructions

The material to be sawn should be placed on a wooden base (preferably 3/4" plywood if considerable cutting is to be done) spanning the whole length of the saw cut and the blade depth adjusted so that it cuts through the material with minimum cut into base board. This prevents dust from falling below the saw cut and concentrates the extraction to the shroud and bag.

3-

DETAIL 3

Components
illustrated overleaf)

1 Shroud

2 Hose harness, comprising two hose pieces and 'Y' connector

3 Jubilee clips (4 of No 1 and 1 of No 2)

Dismantling saw

Remove bolt 4, outer clamp washer 5, saw blade 6, inner clamp washer, wing nut 7, bolt 8, guard stop 9, wing nut 10, shoe 11, two retaining screws 12, lever arm 13, screws 14 15 16 17 and finally main guard 18 by carefully tapping free with hide faced hammer. Should motor unit also be withdrawn, ensure carbon brushes are correctly re-positioned before reassembly.

Assembly with
shroud

Fit saw shroud 1 to guard 18 and reassemble in reverse order ensuring that all screws are fully tightened. Omit lever arm 13 and retaining screws 12. Where necessary lift shroud to gain access to screws. To tighten screw 15 insert screwdriver as shown in drawing D. Ensure that shroud is fitted inside lip of shoe when replacing saw blade. Connect hose harness to shroud. Connect hoses to Y piece, secure all connections with Jubilee clips. An additional clip is included for coupling the unit to the dust extraction hose.

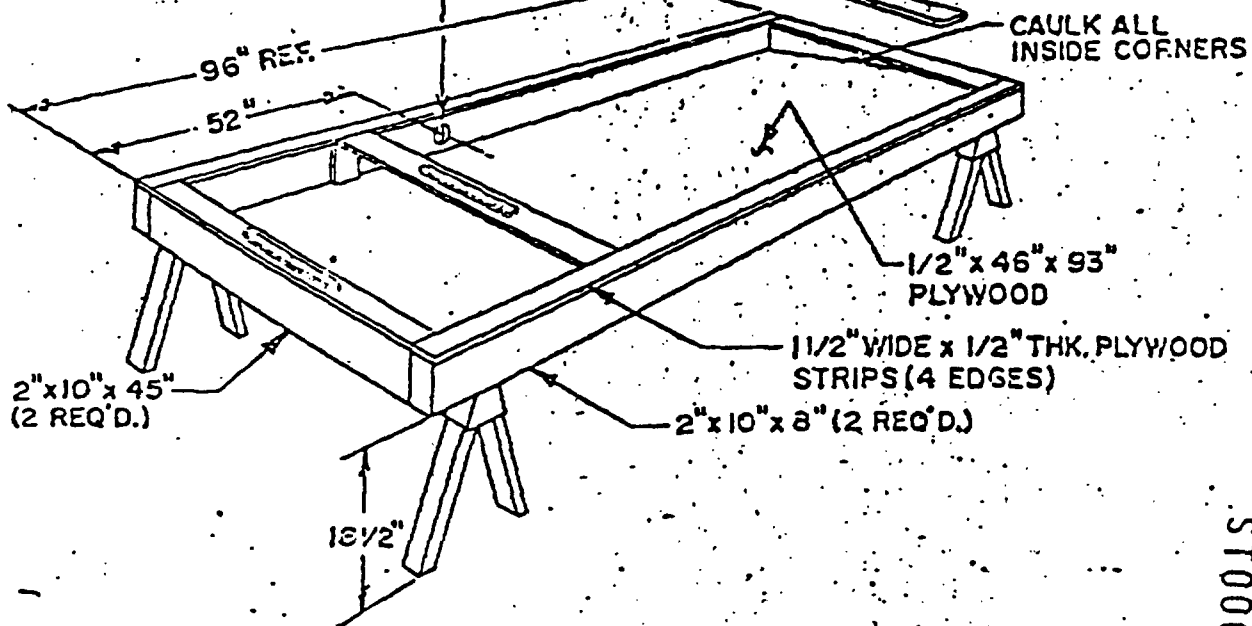
S100/01163

CUTTING BOX-USE WITH ROTARY SAW

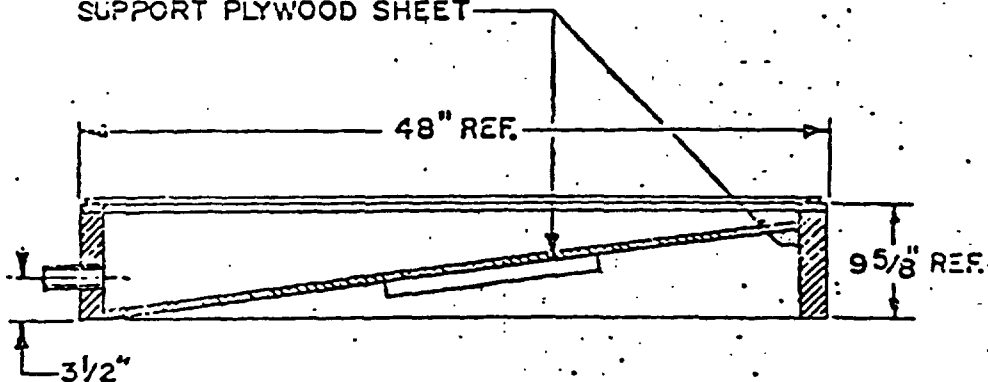
SPEC. E-1, DETAIL 1

BORE HOLE & CAULK IN
PRE-FORMED "BARNELL" TYPE
CONNECTOR FOR 1 1/2" I.D.
VACUUM HOSE

SUPPORT ANGLE-TO FIT
FLUSH WITH TOP EDGES OF
BOX-1" x 4" LUMBER (2 REQ'D.)



BLOCKS AS REQUIRED TO
SUPPORT PLYWOOD SHEET



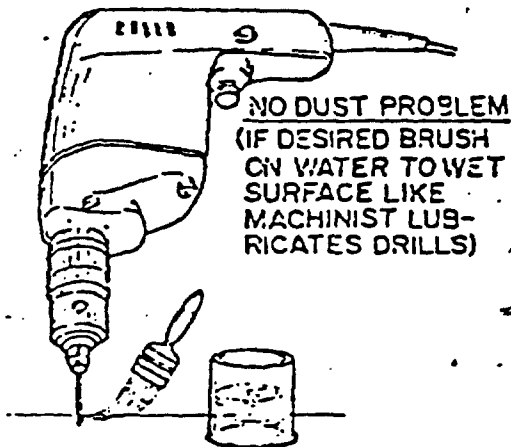
SECTION

ST0001164

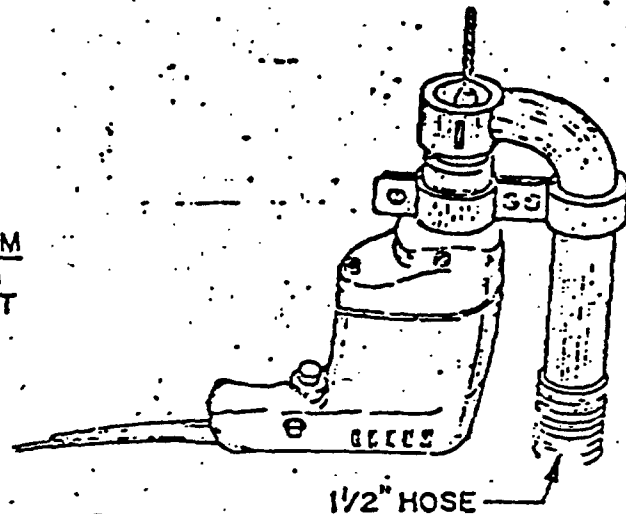
METHODS OF ENGINEERED DUST CONTROL SYSTEMS

PORTABLE ELECTRIC DRILLS

NORMAL DRILLING OF HORIZONTAL SHEETS



DRILLING OVERHEAD OR DRILLING OF VERTICAL SURFACES

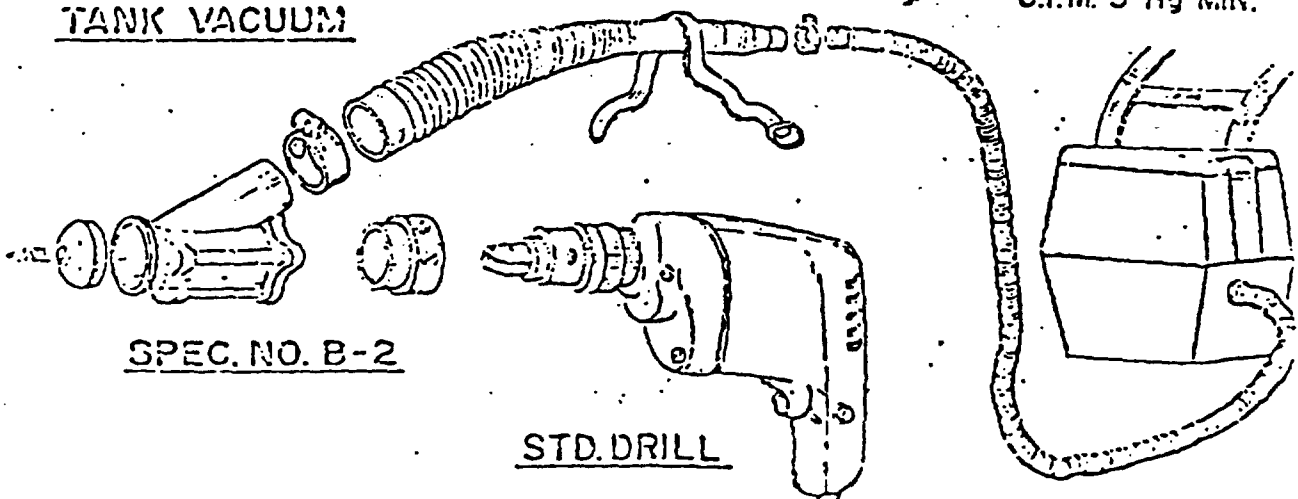


SPEC. B-1

OR



CAPE PORTABLE DRILL NOZZLE KIT COMPLETE WITH BACK PACK TANK VACUUM



ST0001165

DETAIL 1

VIEW "A"-A

2 SLOTS 1/8" WIDE
AS SHOWN

FOR HEAD
TIGHTLY SEALED
FOR SLOTS &
ENTRY

TUBE FLARED FROM
1" I.D. TO 1 1/2" O.D.
ALUMINUM TUBING

MATERIAL: .050 TH
ALUMINUM-WELDED
CONSTRUCTION

MOUNTING BRACKET
CONFIGURATION PROVIDE
AMPLE CLAMPING FOR
ON DRILL CASE & ON
TUBE

1 1/2" I.D. VACUUM
HOSE

ST0001166

DUST EXTRACTOR-DRILL

