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Practices: Shop and Field Fabrication of Asbestos Sheet Products

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RECOMMENDED WORK PRACTICES

SHOP AND FIELD FABRICATION

OF

ASBESTOS SHEET PRODUCTS

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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. The proposed revised standard contained in the Federal Register of Thursday, October 9, 1975, (Vol. 40, No. 197, Part II) will not be a subject of discussion in this manual since it is a proposal without an effective date. When the final revisions are promulgated, this manual will be up-dated.

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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) Permissible Exposure

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

2. 1910.93a(c) Methods of Compliance

Recommends procedures to meet the exposure limits.

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 limits.

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 limits prescribed by the Standard.

The OSHA asbestos standard maximum permissible limits 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.

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 limit 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 limit 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 limits. If fiber concentrations are below permissible limits, 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 limits.

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 limits.

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 limits.

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.

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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 Z9.1-1971. 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 pages 21 through 45.

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

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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 sketches in Appendix B.

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.

*Mentioned on pages 44 and 45.

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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 noted on page 8 and to typical designs shown on pages 12 through 45.

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.

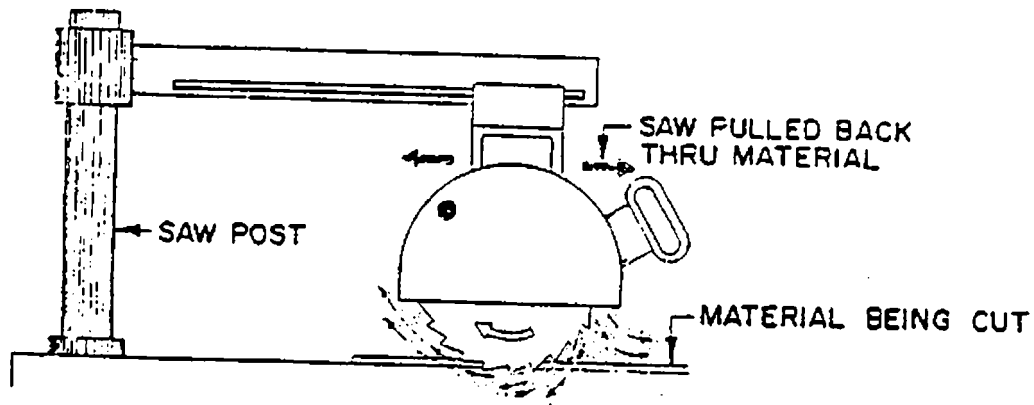
All dust and waste must be disposed of in accordance with paragraph "Housekeeping" on Page 9. Dust from the dust collection devices must be disposed of in sealed containers. Scrap disposal, since it is not friable and disposal does not generate asbestos fiber concentrations above permissible levels, need not follow the requirement for sealed and labeled containers.

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SHOP (FIXED) TOOLS

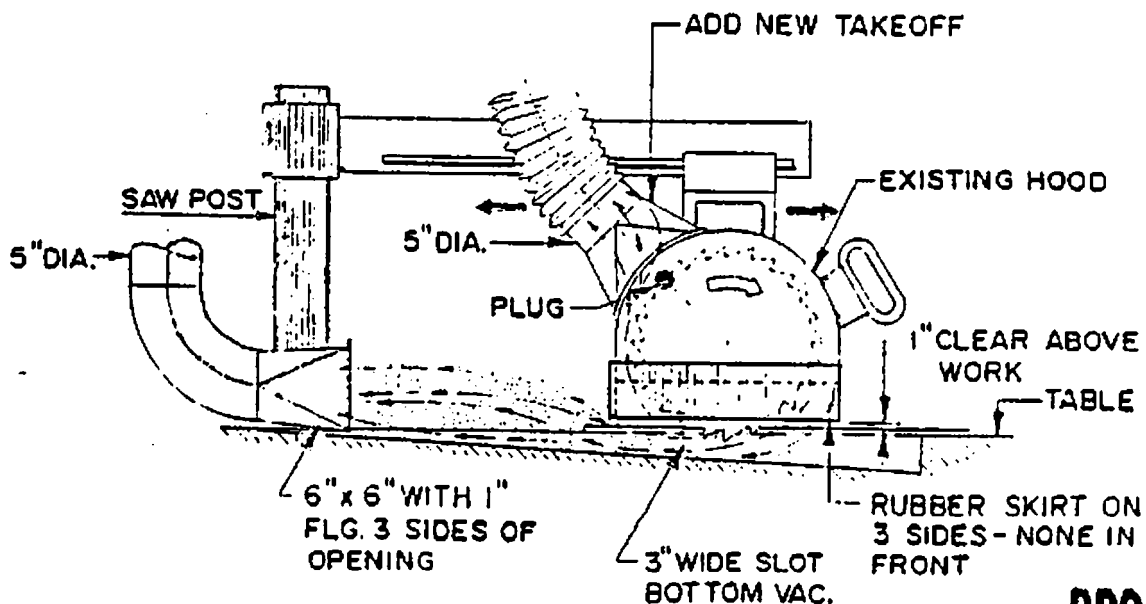
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RADIAL ARM SAW:



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.

Recommended engineered dust control system.



AIR VOLUME = 1300 C.F.M. TOTAL
SUCTION = 14\" WATER OR 1\" H₂O

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PRESENT EQUIPMENT-DESIGN MODIFICATIONS

TABLE SAW

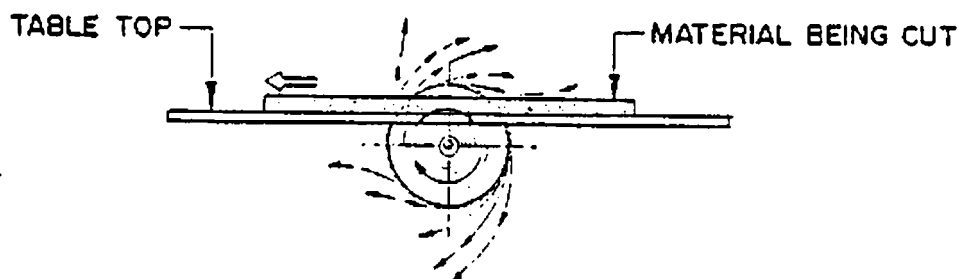
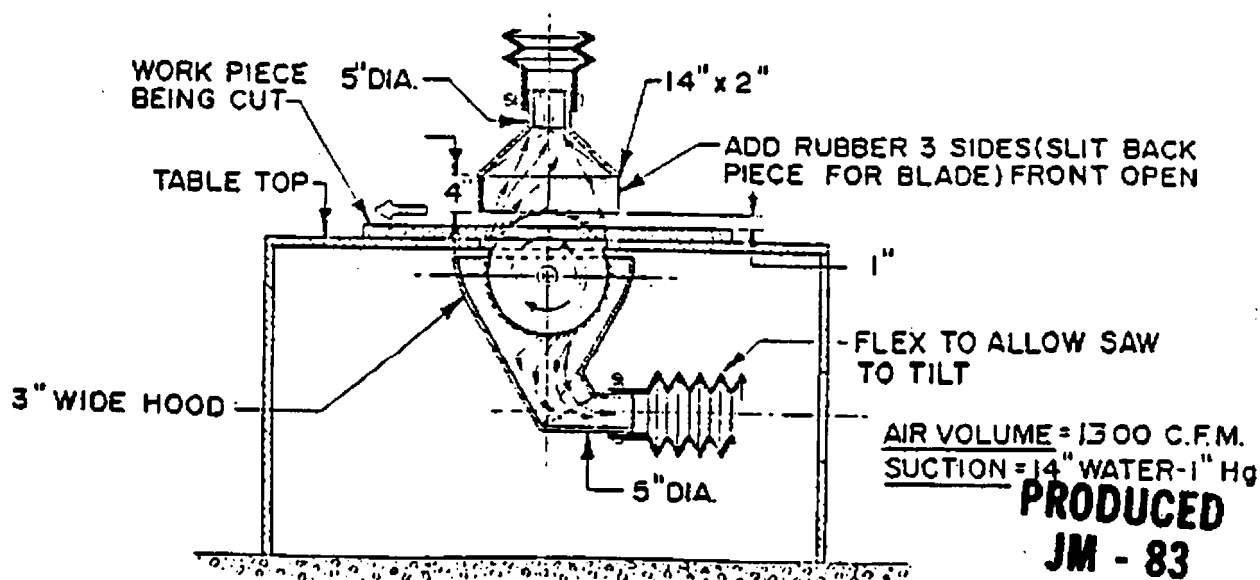


Table saws generate dust as follows:

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.

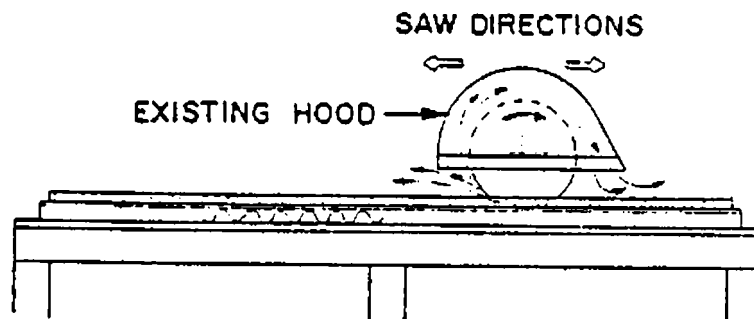
Recommended engineered dust control system.



STONE SAW: - DRY CUTTING:

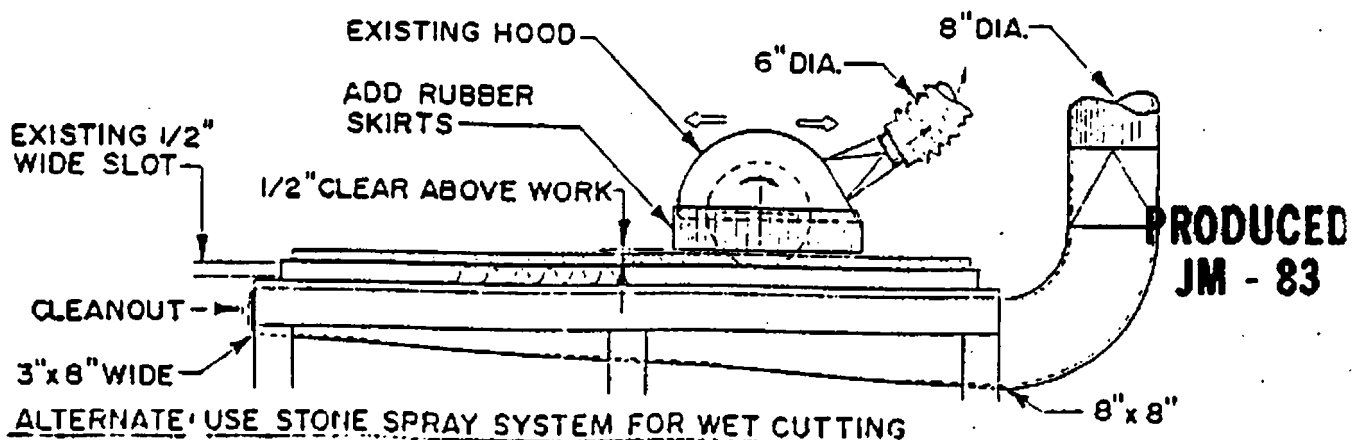
Stone saws when used dry cutting asbestos sheet products generate dust as follows:

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.

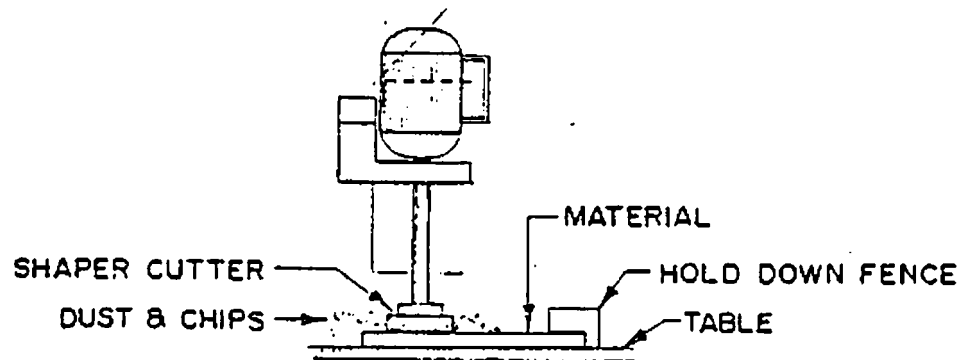
1. Add rubber skirt on existing hood to $\frac{1}{4}$ inch above work.
2. Add 6" pipe to existing hood for dust pick-up.
3. Add 8" wide slot below table for dust pick-up.
4. Use 2500 to 3000 C.F.M. at 14" water on 1" Hg. for vacuum pick-up.



SHAPER - FOR DRY SHAPING:

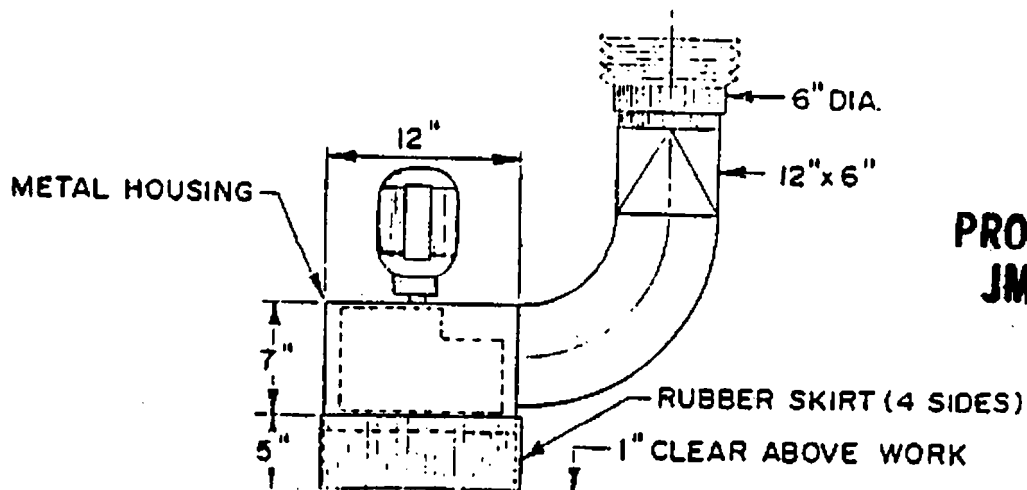
A shaper when shaping or contouring an asbestos sheet product generates dust as follows:

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 900 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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DRILL PRESSES:

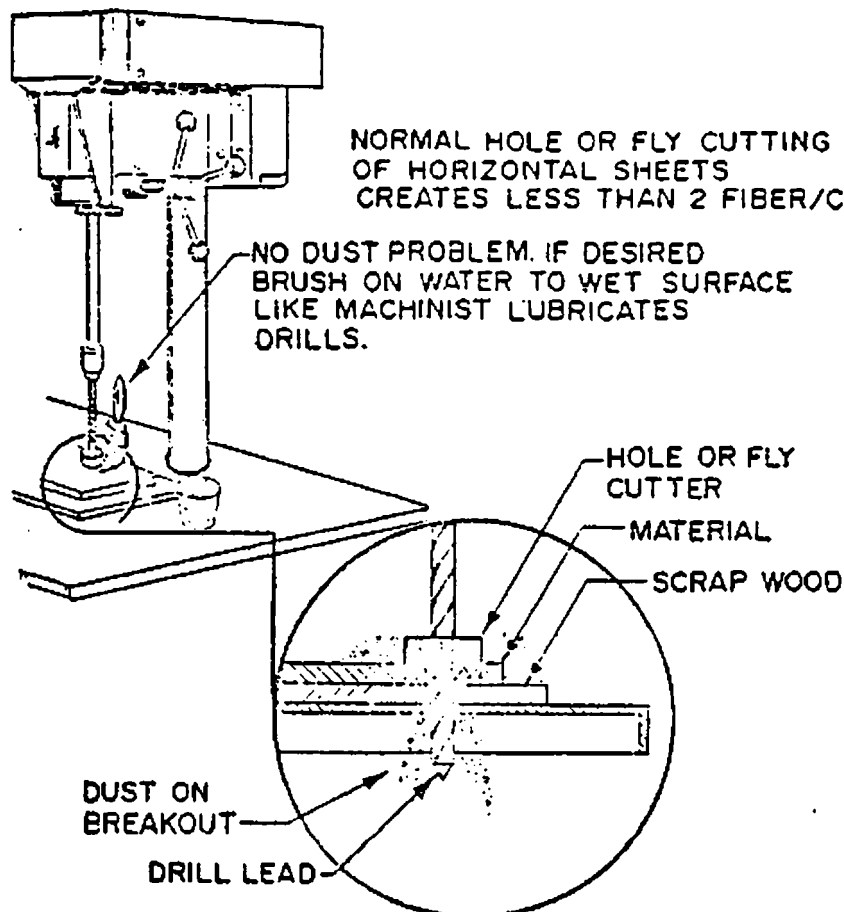
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Drill presses are normally not significant generators of dust as they remove the material in chip form which is larger and heavier than the much finer dust from saws or masonry wheels.

The dust that is generated is from the following sources;

1. Fine dust which comes at the start of drilling plus some dust brought up with the chips.
2. Dust caused by break through of the drill at the bottom of the material.

DRILL PRESS

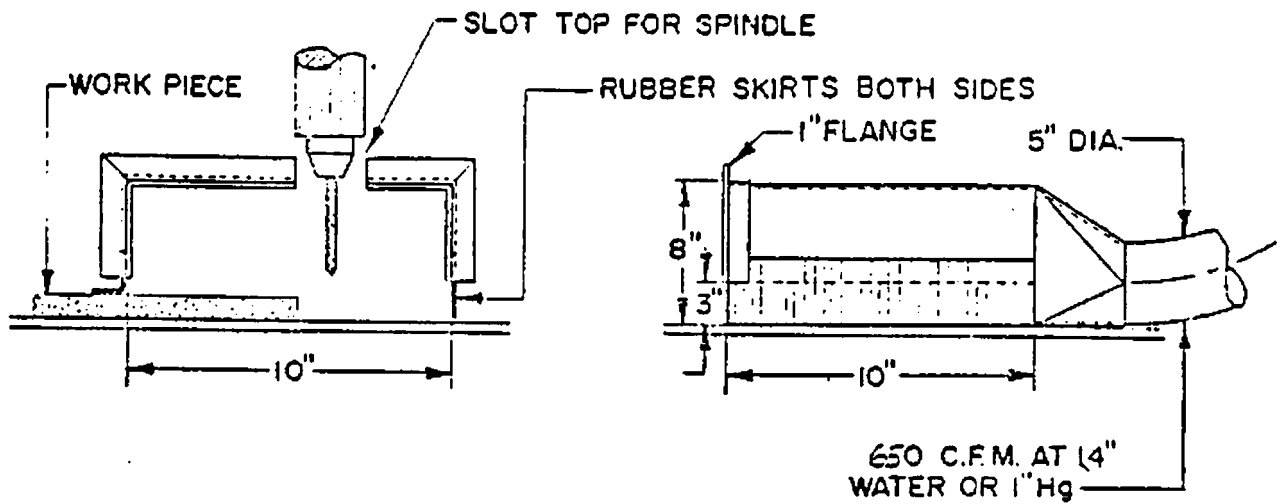


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DRILL PRESSES: (Cont'd.)

(Typical for Flycutters
and Hole Saws Also)

Recommended engineered dust control system



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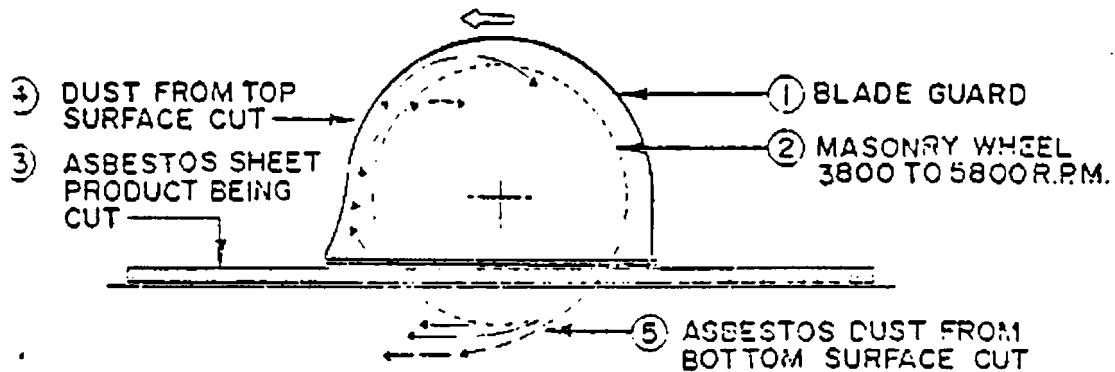
ENGINEERED DUST CONTROL TOOLS-SHOP TOOLSVACUUM REQUIREMENTS

<u>TYPE TOOL</u>	<u>C.F.M.</u>	<u>VACUUM</u>
RADIAL ARM SAW	1300	14" Water
TABLE SAW	1300	14" Water
STONE SAW	2500 to 3000	14" Water
SHAPER	900	14" Water
DRILL PRESS	650	14" Water

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PORTABLE TOOLS

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HOW IT CREATES DUST

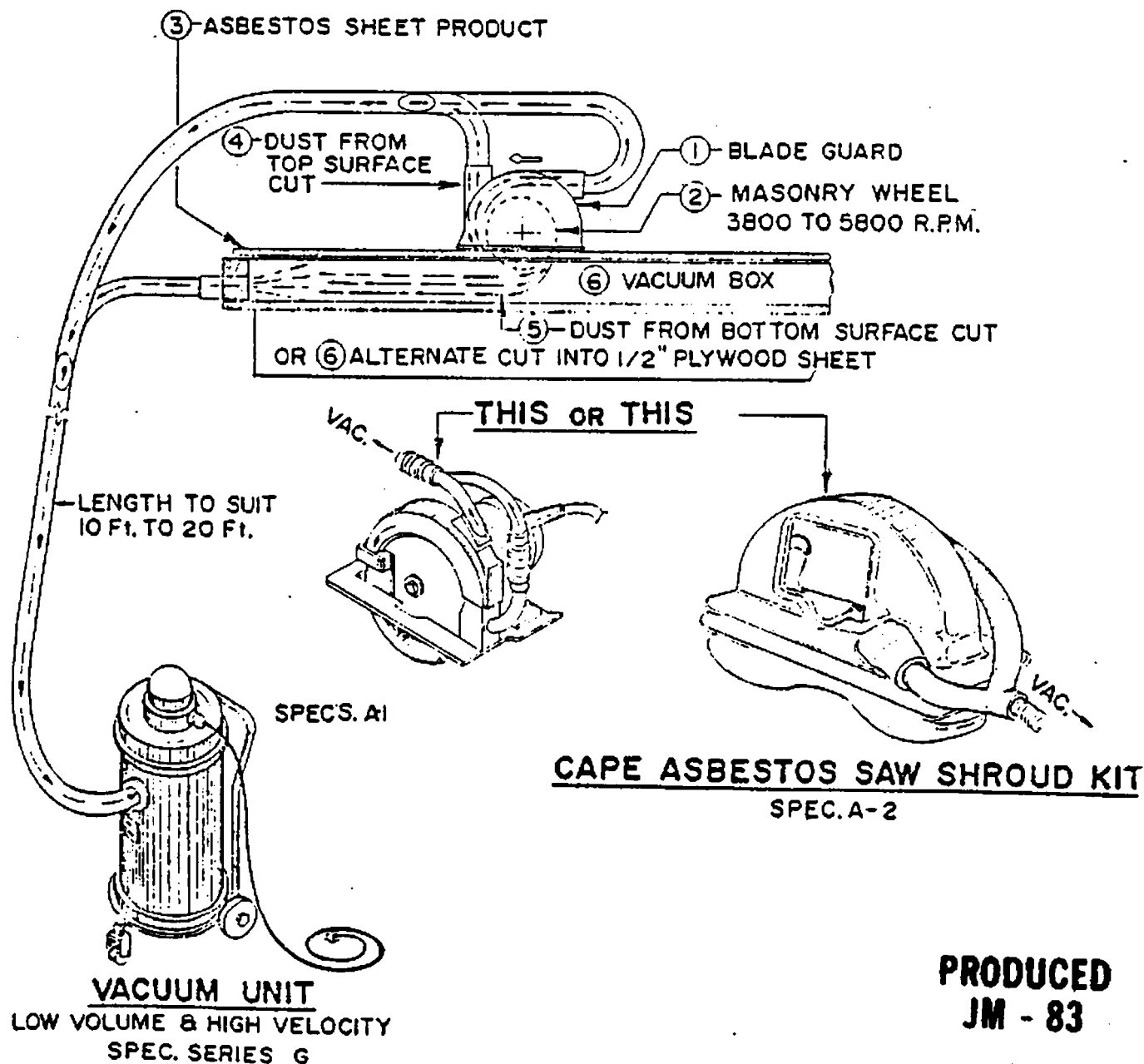
I. High speed masonry wheel (2), moving at 3800 R.P.M. to 5800 R.P.M. cuts first into asbestos sheet (3) in an upward manner as its leading edge contacts the material and creates upward dust storm (4) which hits blade guard (1) and bounds into hub area of masonry wheel (2) which whips it into air like a blower above the material being cut.

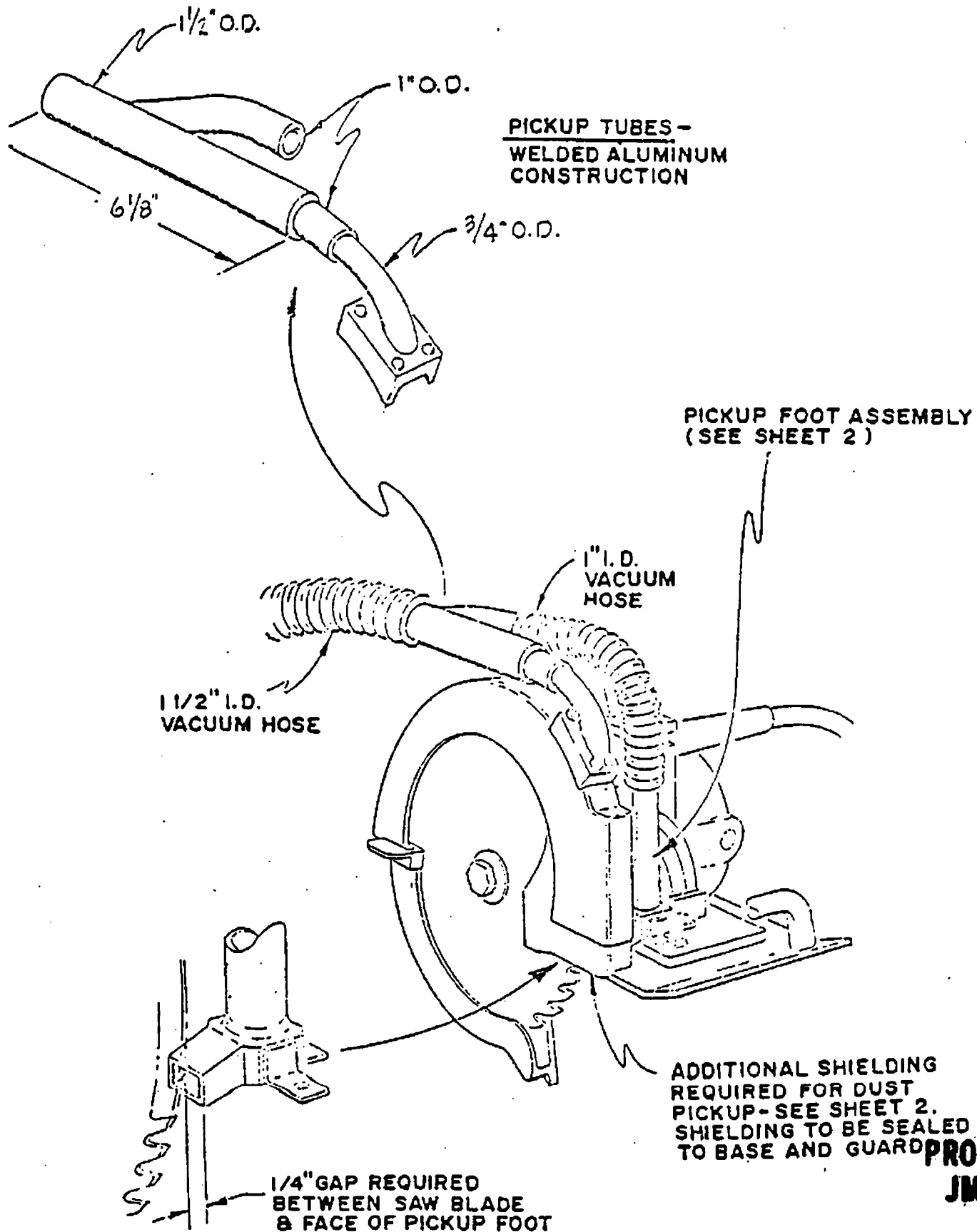
II. As high speed masonry wheel (2), progresses into asbestos sheet (3) the back edge of the masonry wheel (2) enters the cut in the asbestos sheet (3) and rubs both edges of cut and creates dust storm (5) below surface of cut sheet (3).

METHODS OF ENGINEERED DUST CONTROL SYSTEMS

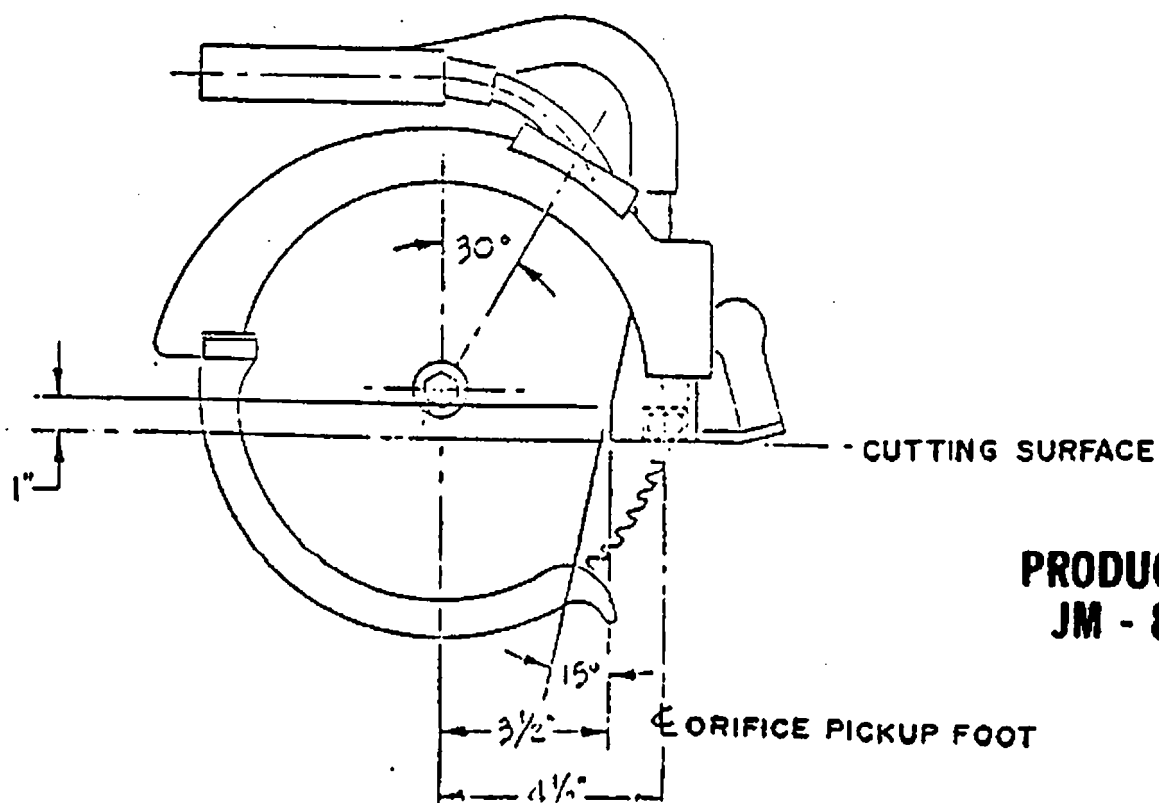
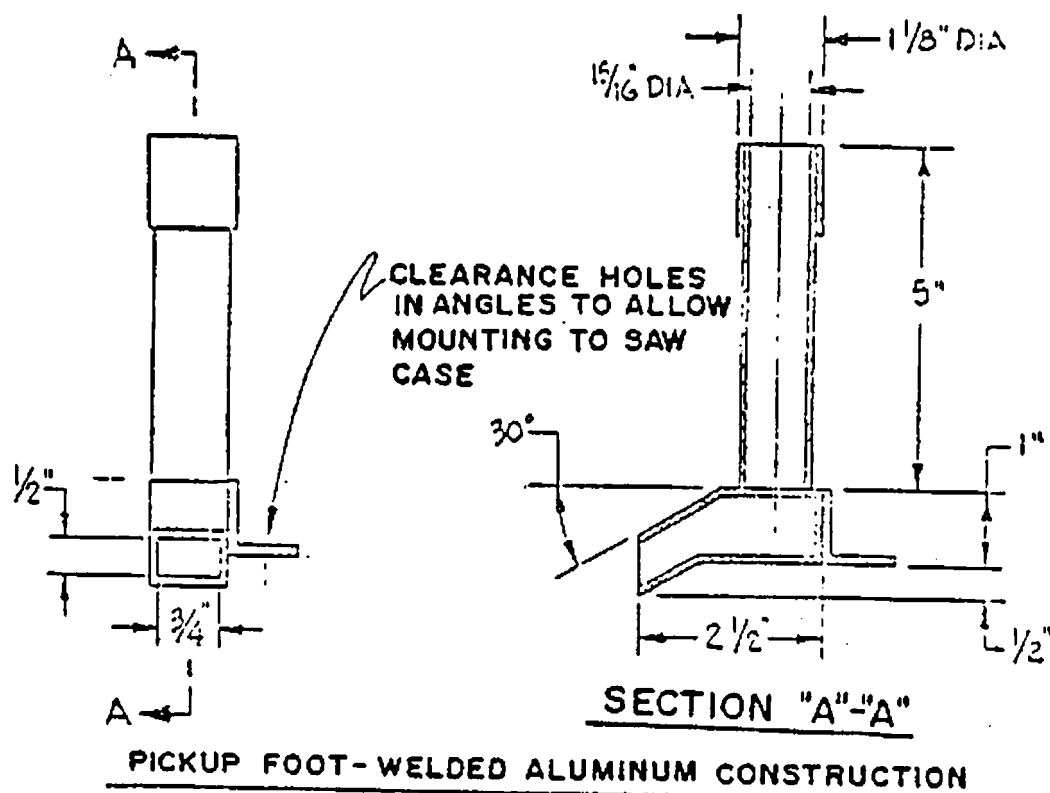
PORTABLE ELECTRIC ROTARY POWER SAWS.

- 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.

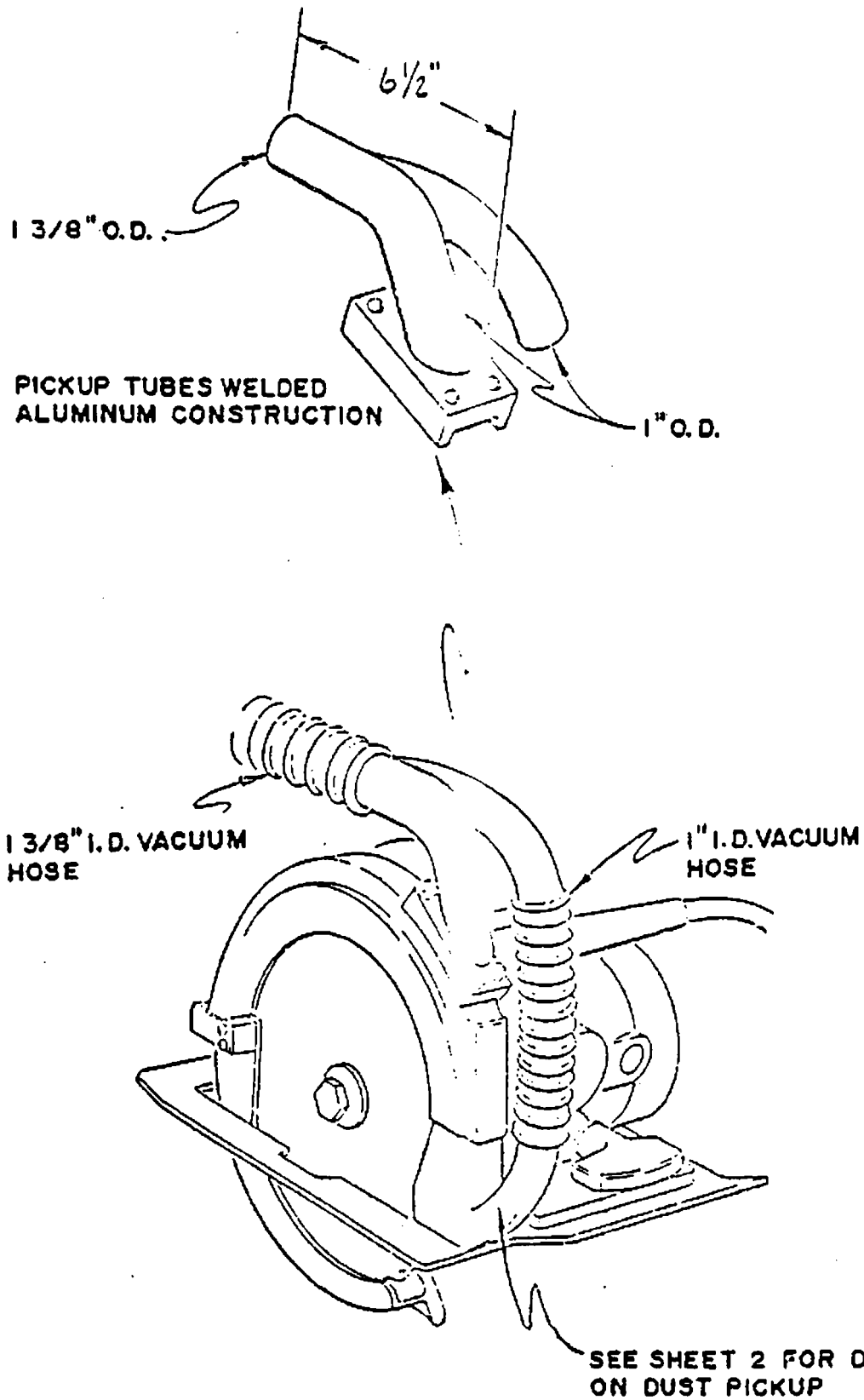




DUST EXTRACTOR-PORTABLE SAW-10 1/4" DIA. BLADE

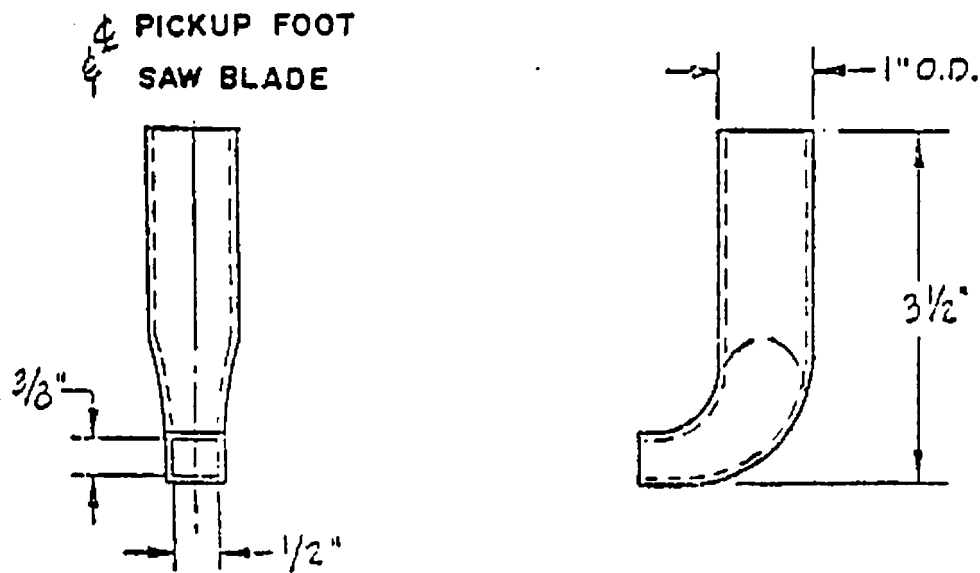


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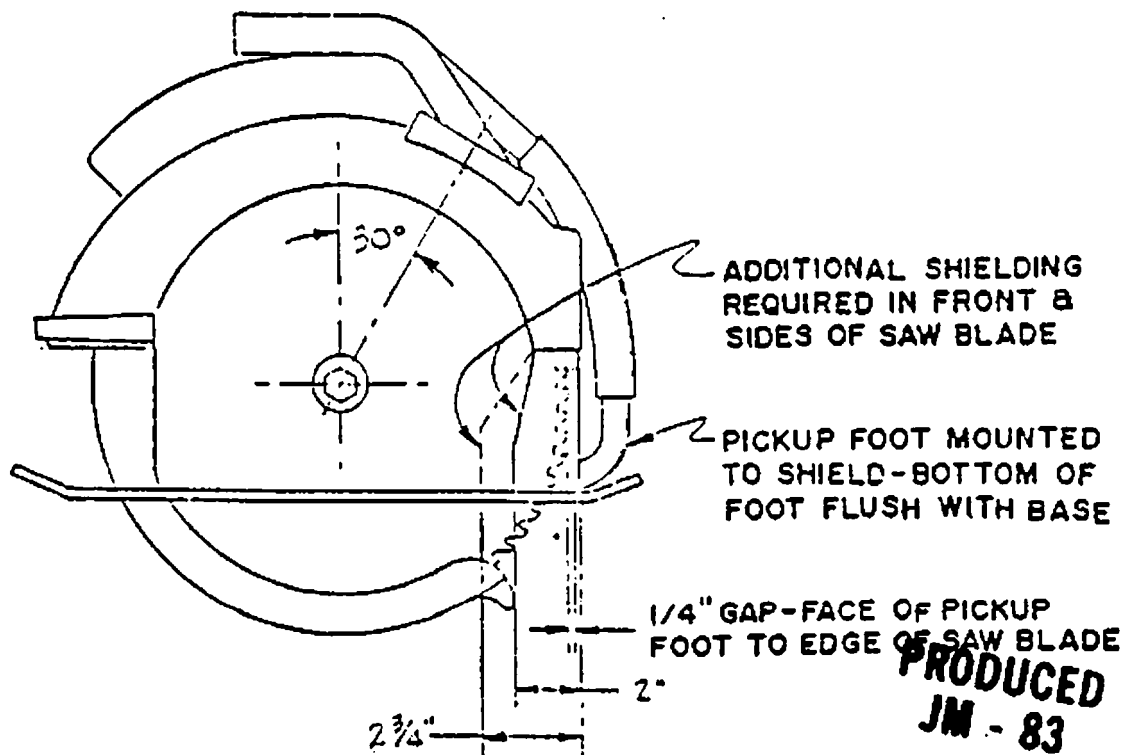


DUST EXTRACTOR - PORTABLE SAW - 7 1/4" DIA. BLADE

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PICKUP FOOT-WELDED TO SHIELDING



DUST EXTRACTOR-PORTABLE SAW-7 1/4" DIA. BLADE

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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-

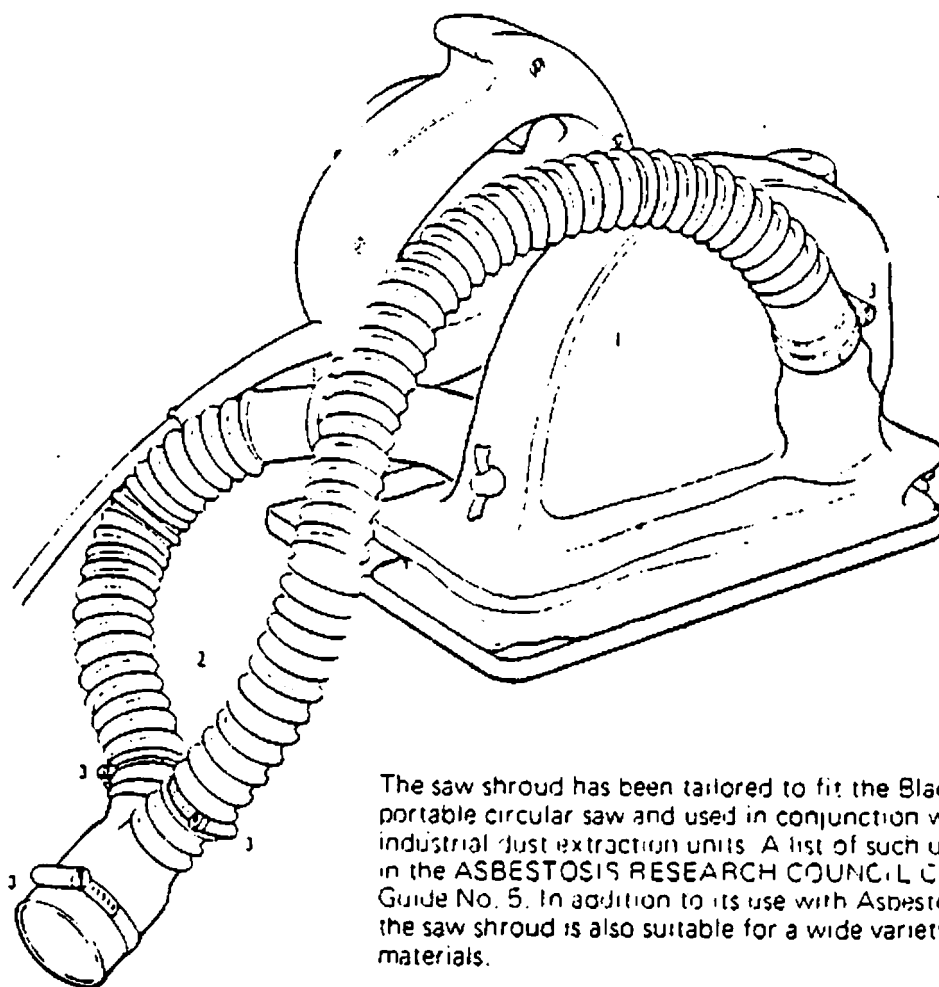
VACUUM:

2 hose pieces for vacuum attachments

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Dust extraction shroud kit for the HD1215 portable saw

Approved by the Asbestosis Research Council



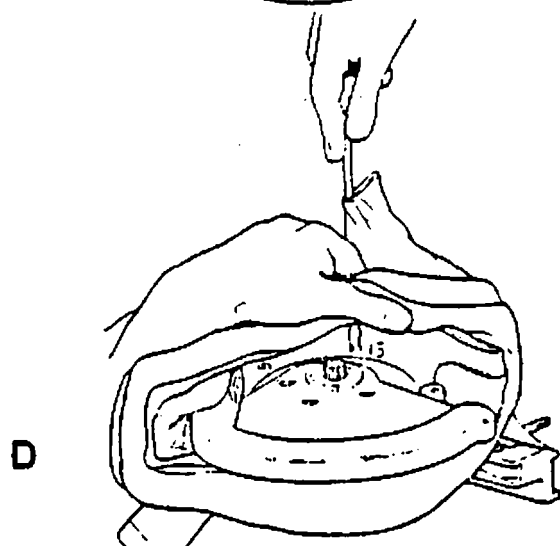
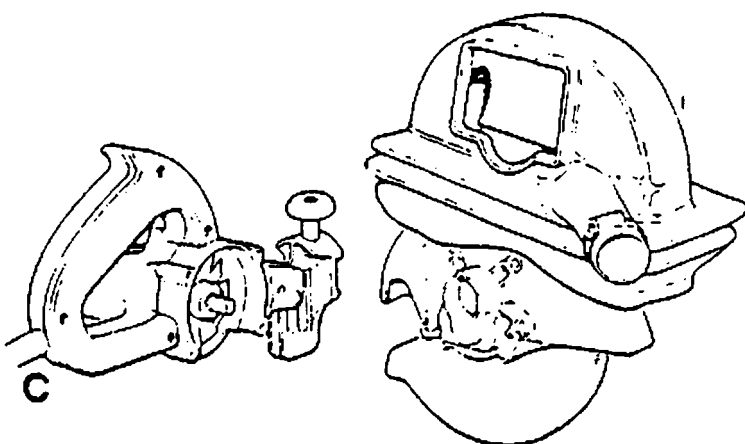
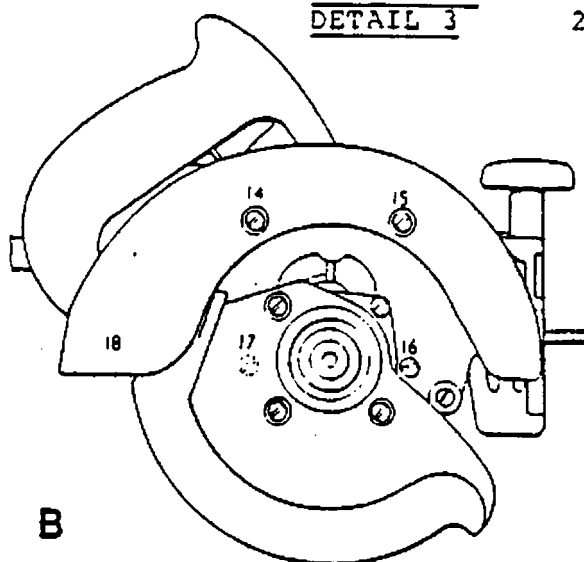
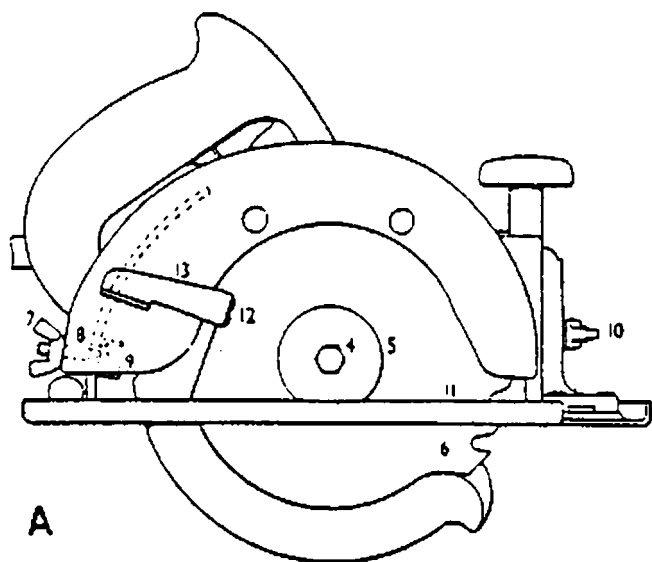
Operating instructions

The saw shroud has been tailored to fit the Black and Decker 9 1/2" portable circular saw and used in conjunction with approved 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.

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 enclosing the upper part of the blade where the dust is drawn off by lightweight hose to the exhaust unit.

If the saw and shroud is to be used above 1 1/2" depth of cut, care should be taken to ensure the shroud does not foul the blade.

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**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.

**Reassembly 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.

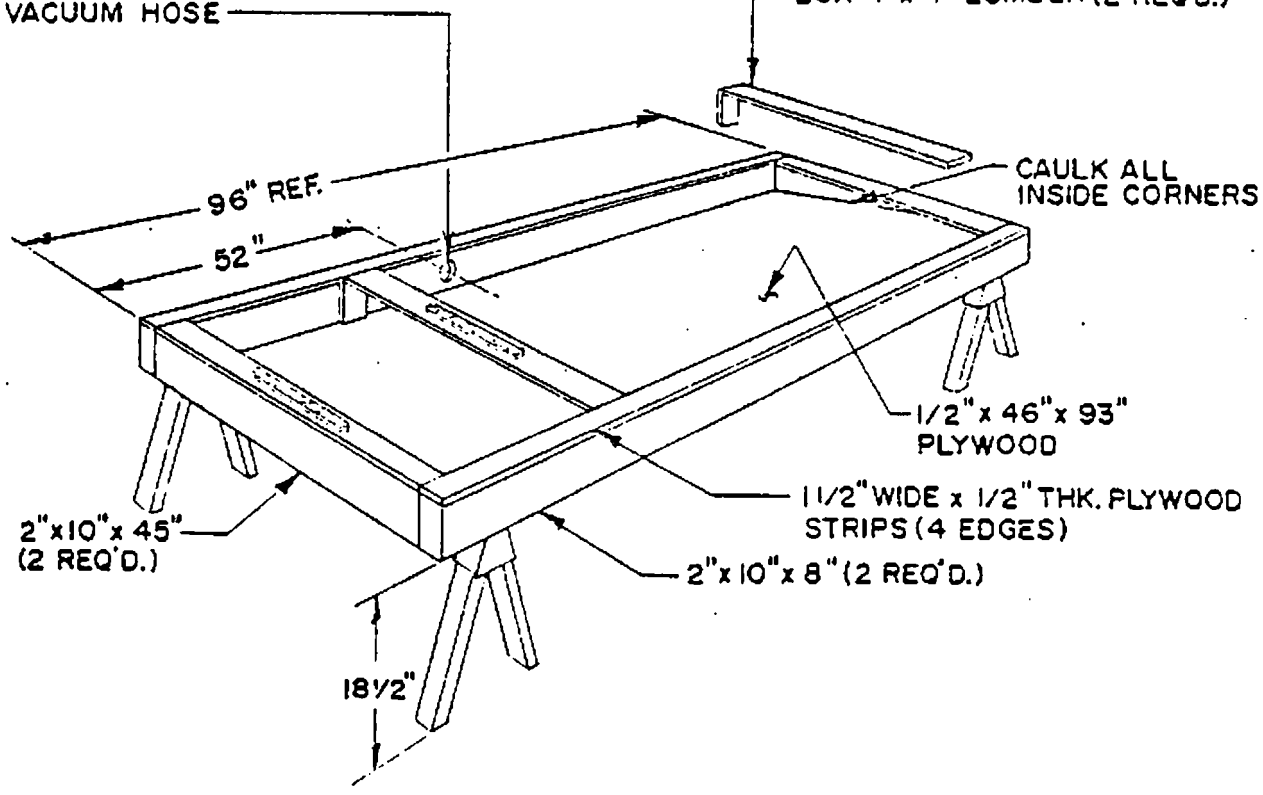
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CUTTING BOX-USE WITH ROTARY SAW

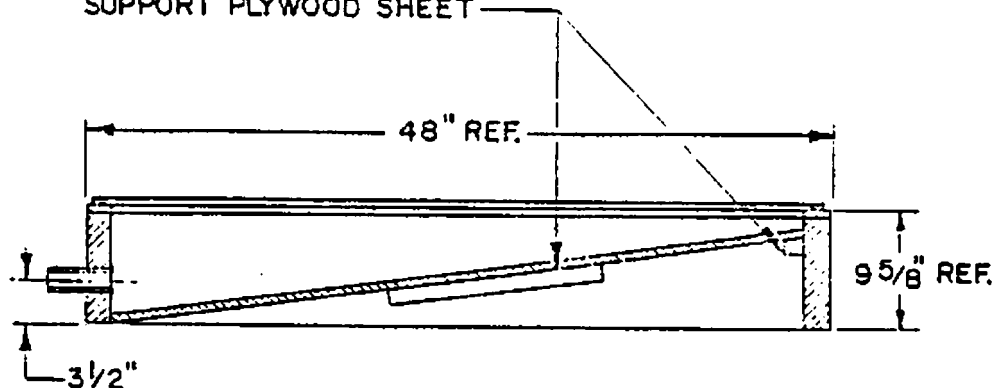
SPEC. E-1, DETAIL 1

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"x4" LUMBER (2 REQ'D.)



BLOCKS AS REQUIRED TO
SUPPORT PLYWOOD SHEET



SECTION

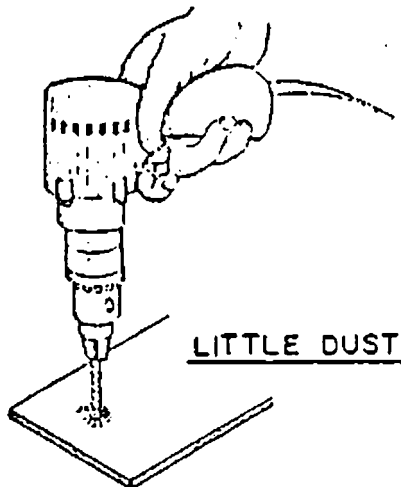
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PORTABLE ELECTRIC DRILLS & HOW THEY CREATE DUST

31

Portable electric drills generally create excessive dust only when drilling vertical or overhead surfaces.

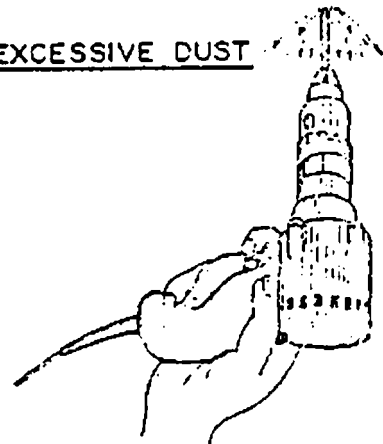
NORMAL DRILLING DOES NOT
CREATE EXCESSIVE DUST ON
HORIZONTAL SHEETS



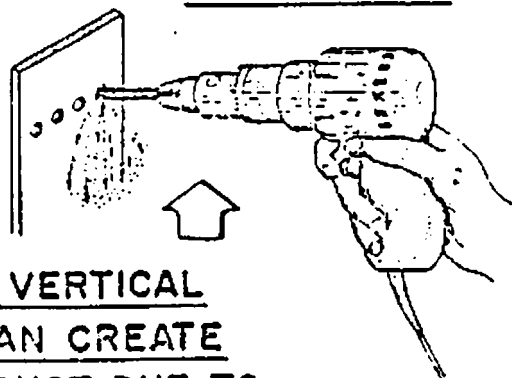
DRILLING OVERHEAD CAN
CREATE EXCESSIVE DUST
DUE TO UNEVEN ANGLE
& PRESSURE



EXCESSIVE DUST

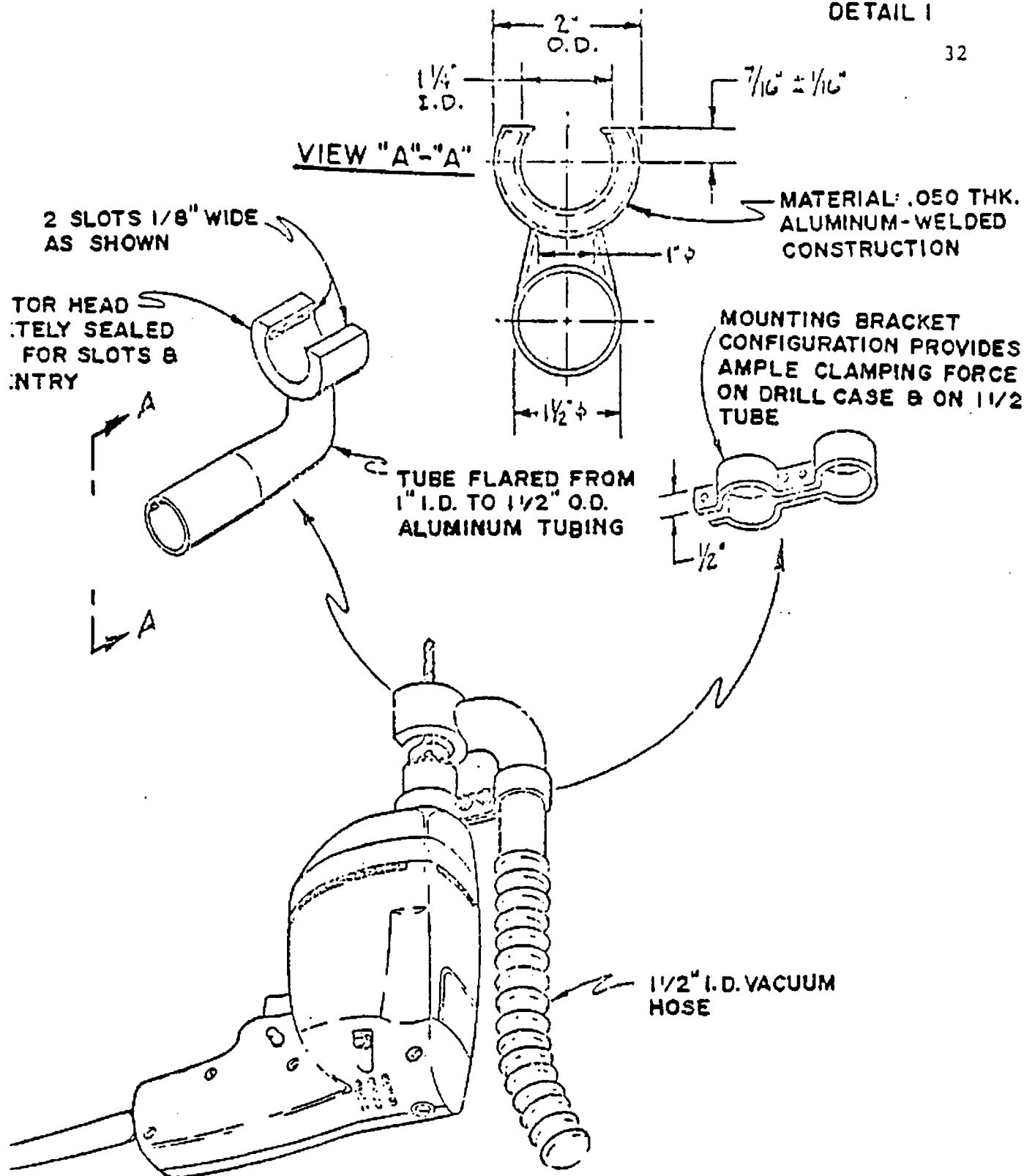


EXCESSIVE DUST



DRILLING OF VERTICAL
SURFACES CAN CREATE
EXCESSIVE DUST DUE TO
UNEVEN ANGLE & PRESSURE

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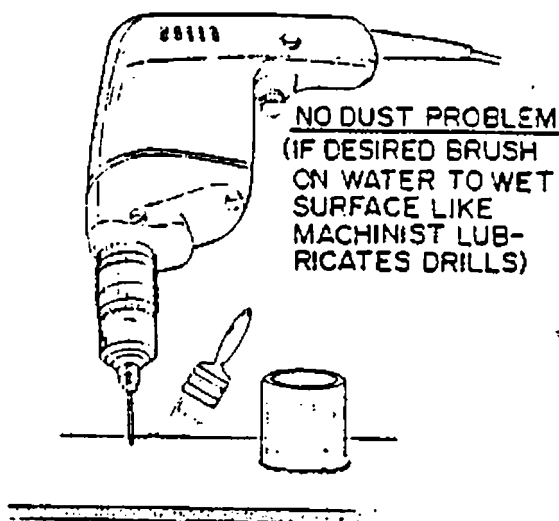
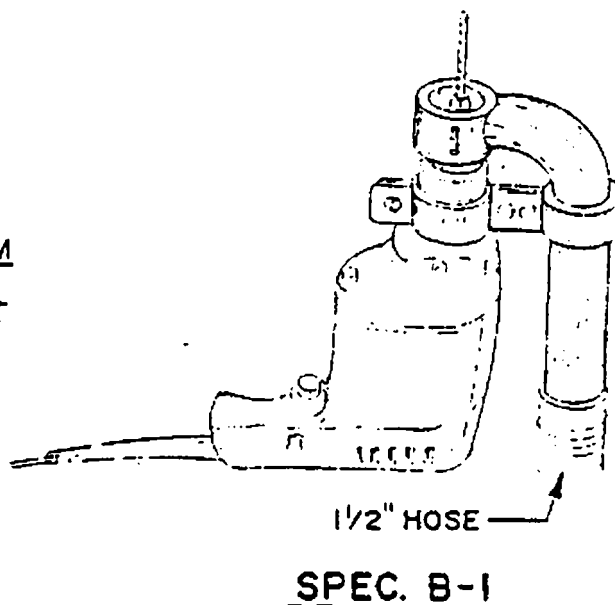
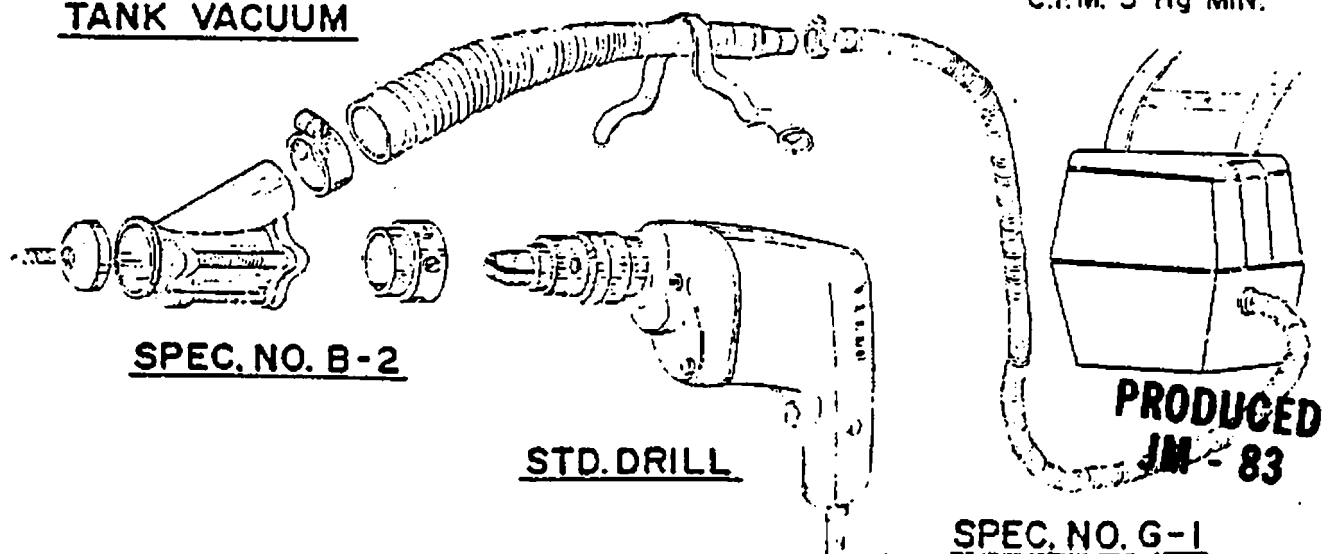


DUST EXTRACTOR-DRILL

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METHODS OF ENGINEERED DUST CONTROL SYSTEMS

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PORTABLE ELECTRIC DRILLSNORMAL DRILLING OF
HORIZONTAL SHEETSDRILLING OVERHEAD OR
DRILLING OF VERTICAL SURFACESORCAPE PORTABLE DRILL NOZZLE KIT
COMPLETE WITH BACK PACK
TANK VACUUM

SPECIFICATION NO. B-2

DETAIL 1

MANUFACTURER: Cape Universal Building Products
Register Office P. O. Box 165
Exchange Road
Watford, England
Phone: Watford 34551

TYPE OF EQUIPMENT:MODEL NO.

Portable Drill Nozzle Kit

NONE

EQUIPMENT SPECIFICATIONS:

Portable Drill Nozzle Kit - Pat. App. 59390

SIZE:

Fits with Adaptor A 3/8" or 5/16" size drills or 1/2" drills
with chucks less than bearing size.

ELECTRICAL: -NONE-

VACUUM:

Works with Back Pak or regular vacuum units.

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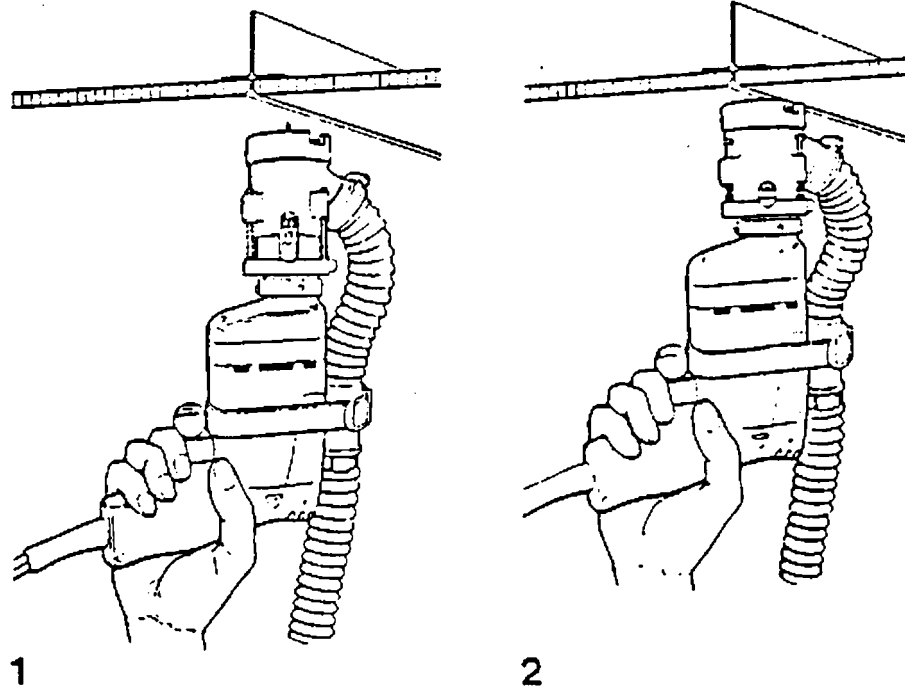
Portable drill nozzle kit

35

SPEC. B-2
DETAIL 2

pat. app. 59390

Approved by the Asbestosis Research Council

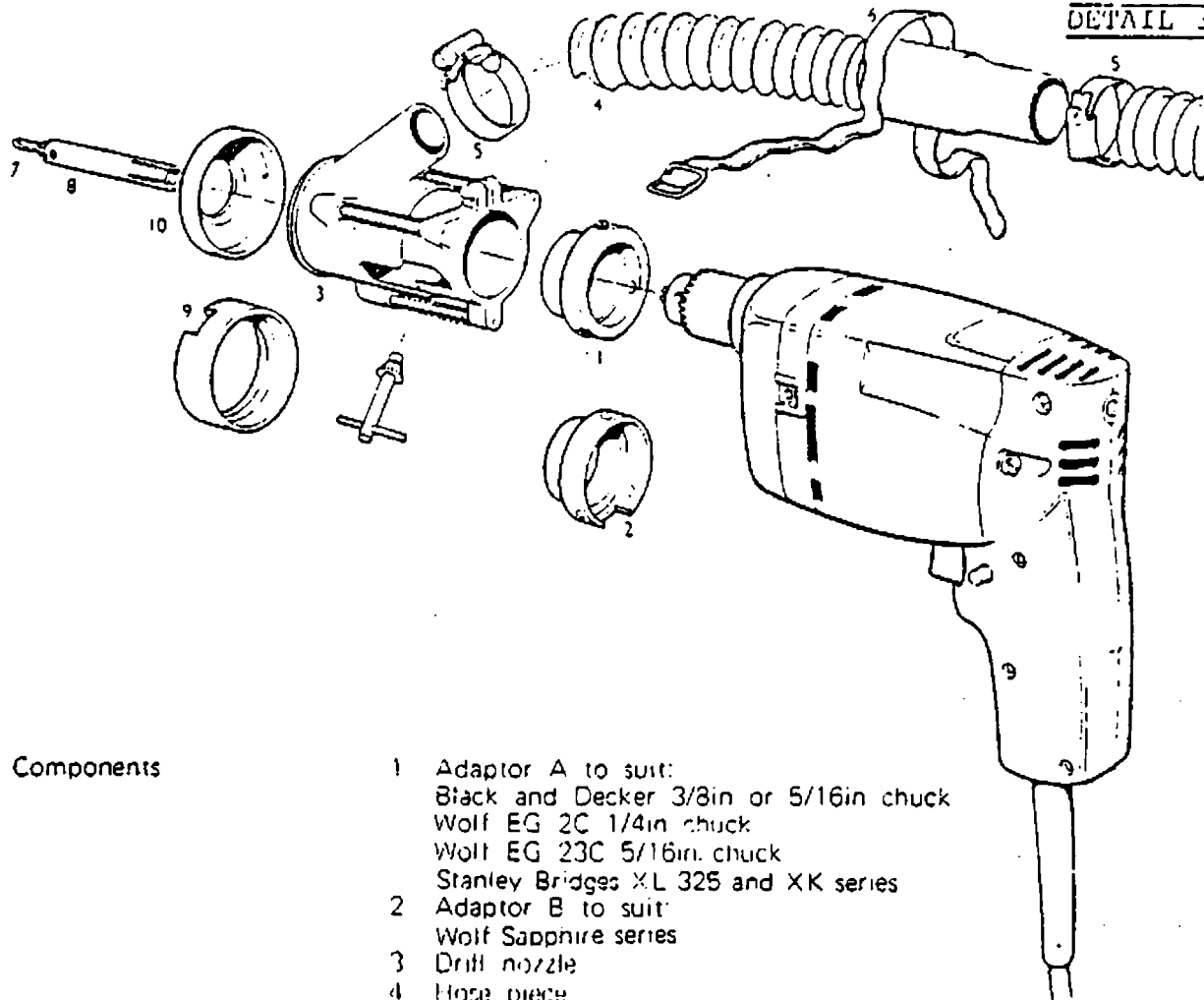


Operating
instructions

Power drills adapted with the kit do not require special operating procedures. The design of the kit allows the drill bit to be accurately positioned on the surface to be drilled (1) and as drilling takes place the drill nozzle compresses to allow the drill bit to proceed (2)

The nozzle can be adapted to accommodate the Teks[®] screw fixing system, advice obtainable from Cape Universal Building Products Limited.

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Components

- 1 Adaptor A to suit:
Black and Decker 3/8in or 5/16in chuck
Wolf EG 2C 1/4in chuck
Wolf EG 23C 5/16in. chuck
Stanley Bridges XL 325 and XK series
- 2 Adaptor B to suit:
Wolf Sapphire series
- 3 Drill nozzle
- 4 Hose piece
- 5 Jubilee clip (2 no)
- 6 Retaining strap with adhesive backing
- 7 9/64in drill bit
- 8 Countersink attachment
- 9 Open ended cap: for horizontal surfaces (ceilings)
- 10 Conical cap: for vertical surfaces (walls)

Assembly instructions

Select adaptor 1 or 2 to suit drill. Fit to neck of drill and secure with three grub screws.
Fit drill nozzle 3 to neck of adaptor, ensure that exhaust outlet is at top and tighten flange screw.
Connect hose piece 4 to exhaust outlet and secure with jubilee clip 5.
Remove paper from adhesive backing of retaining strap and secure hose to drill with strap.
Insert hose piece into exhaust unit hose and secure with second jubilee clip. Assemble drill and countersink attachment and fit into chuck.
Tighten chuck by inserting key through aperture in nozzle. Select cap 9 or 10 and fix to nozzle using twisting action.

Cape Universal

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DETAIL 4

Cape Universal Drill Attachment Cross-Match with American Drills

<u>Manufacturer</u>	<u>Model Number</u>	<u>Size</u>	
SKIL	596	1/4	
	597	3/8	
	598	1/2	(o.k. if chuck changed)
	1176	1/4	
	401	1/4	
	75	1/4	
	220	1/4	
	597	3/8	only if Right Supreme Model B90A chuck or Model B80A chuck
Millers Falls	SP220	1/4	
	SP220-1	1/4	
	SP220-3	1/4	
	SP321	1/4	
	220-11	1/4	
	SP342	3/8	
	NO250	3/8	
	SP501	3/8	
Milwaukee Drills	0101	1/4	uses Jacobs -BF- o.k.
	0102-1	1/4	uses Jacobs -BF- o.k.
	0120	1/4	uses Jacobs -BF- o.k.
	0140	1/4	uses Jacobs -BF- o.k.
	0180	1/4	uses Jacobs -BF- o.k.
	0190	1/4	uses Jacobs -BF- o.k.
	0200	5/16	uses Jacobs 10B- o.k.
	0121		
	0122-1		
	0141		
	0161		
	0181		
	0192		
	Black and Decker	1040	1/4
1041		1/4	
1042		1/4	
1043		1/4	
1044		1/4	
1060		1/4	
1180		3/8	only if Jacobs 31B chuck is used
Black and Decker	1487	o.k.	
Air Drills	1488	o.k.	

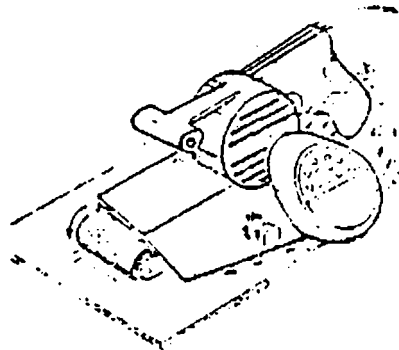
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- I. There are 2 types of sanders used in sanding asbestos sheets to get smooth surfaces. They are as follows:

BELT TYPE SANDERS

These are rough type belt sanders using a continuous belt of abrasive against the material in scratching action which generates loose dust. The amount of dust is dependent upon grade of abrasive (fine to coarse) on belt, belt speed and pressure on sander against surface being sanded.

The dust is mainly at the back of the sander but some is emitted along the sides of the belt.

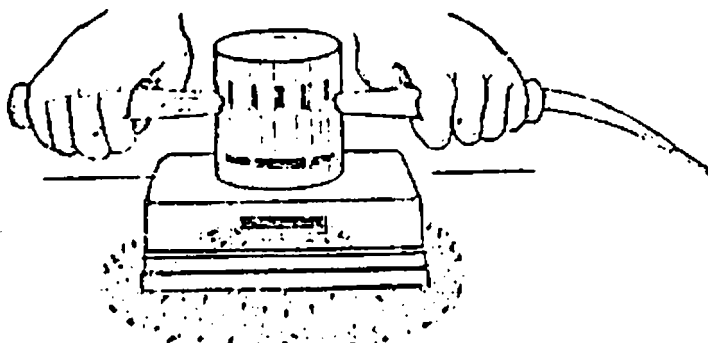


BELT TYPE SANDER

VIBRATORY TYPE SANDERS

These vibratory type sanders are a finishing type sander which use a strip of sand paper below a cushion pad with the ends fastened in various manners. The sanding movement is caused by an

VIBRATORY TYPE SANDER



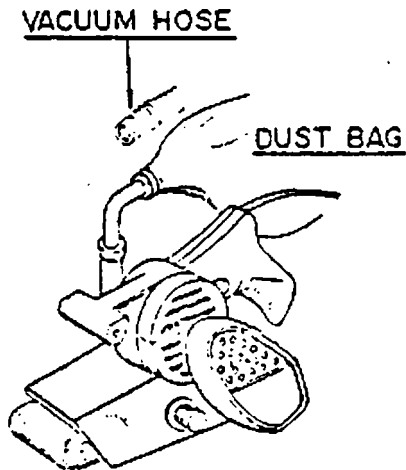
offset motion
or vibration
which sets up the
oscillation.

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- I. The following are the methods of dust control for portable electric sanders.

BELT TYPE SANDERS

Some belt type sanders have a built-in control system with dust bag. These can be used by themselves or



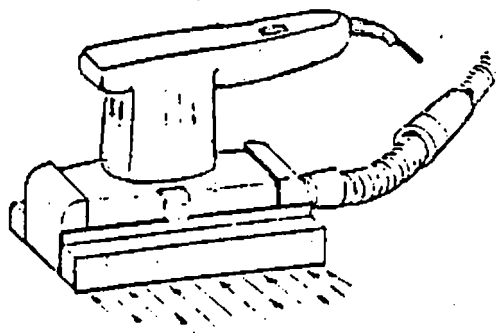
BELT TYPE SANDER
SPEC. C-1, C-2, C-3

connect to vacuum unit of 50 to 75 C.F.M. and 6" hg. or 68" water vacuum capacity. See Specs. G for vacuum equipment. For control on sanders without built-in systems, see Spec. C-4.

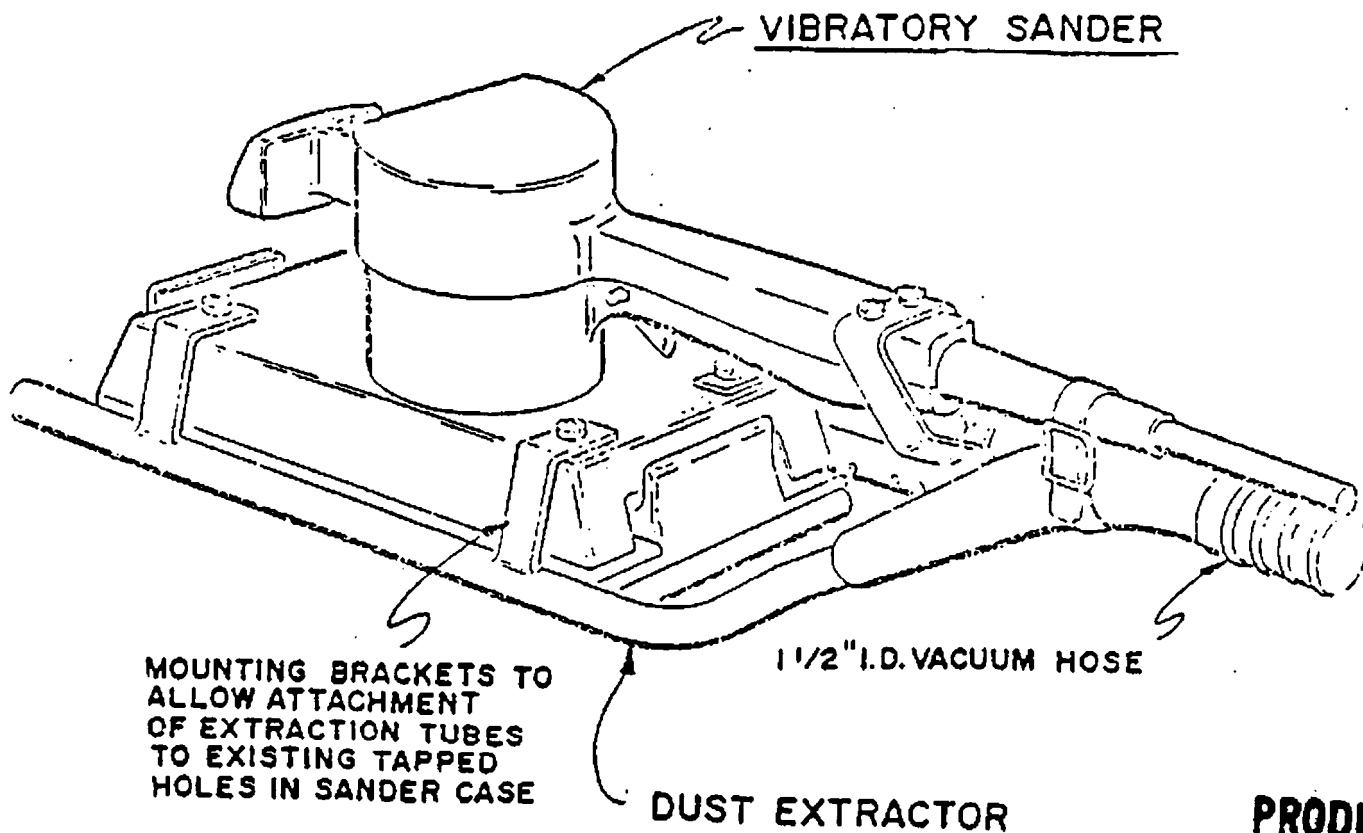
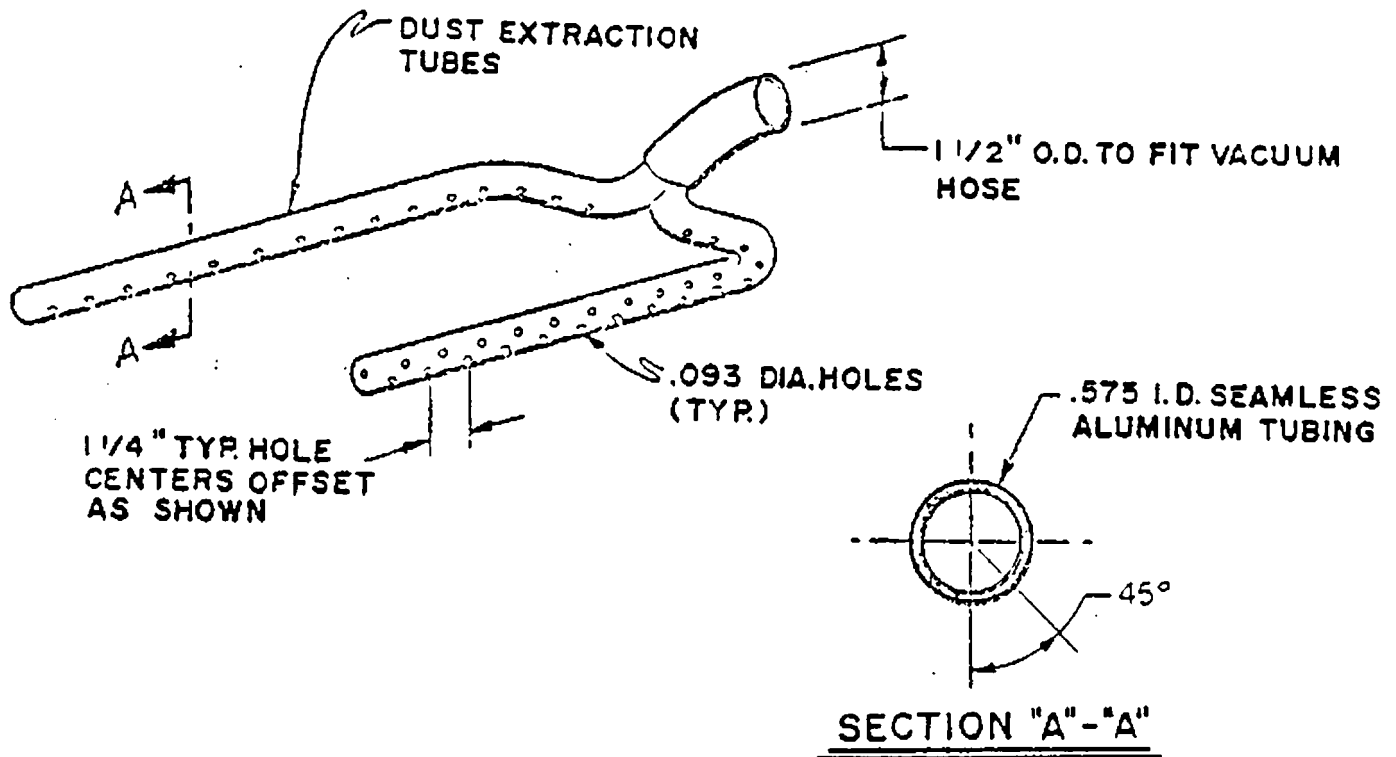
VIBRATORY TYPE SANDERS

There are on the market several dustless sanders (or polishers) of the orbital type which have built-in dustless attachments for use with canister type vacuum units as Spec. G and specified for belt type units above.

DUSTLESS
SANDER



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DUST EXTRACTOR — VIBRATORY SANDER

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SPECIFICATION NO. C-2

MANUFACTURER: Rockwell International
 400 Lexington Avenue
 Pittsburgh, Pennsylvania
 (421) 241-8400
 Attn: Rex Moore or Dennis Huntsman

TYPE OF EQUIPMENT:MODEL NO.

Portable Electric Belt Sanders	No. 500 Dust Controlled
Portable Electric Belt Sanders	No. 503 Dust Controlled
Portable Electric Orbital Sander	No. 505 Dust Controlled

EQUIPMENT SPECIFICATIONS:

Portable Electric Belt Sanders	No. 500 with dust control
Portable Electric Belt Sander	No. 503 with dust control
Portable Electric Orbital Sander	No. 505 with dust control

SIZE:

Model 500, 4" x 27" with dust control
 Model 503, 3" x 24" with dust control
 Model 505, orbital sander, with dust control

ELECTRICAL:

Model No. 500	115 volt AC/DC	12 amps	1,550 FSPM
Model No. 503	115 volt AC/DC	9 amps	1,180 FSPM
Model No. 505 (Orbital Sander)	115 volt AC/DC	3 amps	10,000 OPM

VACUUM:

Built-in attachment for bag can also be used with hose and larger vacuum system.

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SPECIFICATION NO. C-3

MANUFACTURER: Skil Corporation
7234 Linder Avenue
Skokie, Illinois
(312) 679-6830
Attn: Messrs. William Skinner or William Foote

TYPE OF EQUIPMENT:MODEL NO.

4½" Heavy Dust Belt Sander
with Vacuum Dust Collector

324

EQUIPMENT SPECIFICATIONS:

Skil Model No. 324

Belt Size 4½" x 26", Pad 4½" x 3/4"
with Vacuum Dust Collector

SIZE:

4½" Heavy Duty

ELECTRICAL:

No. 324 115 Volt AC/DC 10 amps 1,300 RPM no load

VACUUM:

Dust collector bag attached. Suggest it be hose connected to
other vacuum equipment.

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ENGINEERED DUST CONTROL - PORTABLE TOOLSVACUUM REQUIREMENTS*

<u>TYPE TOOL</u>	<u>C.F.M.</u>	<u>MINIMUM VACUUM</u>
4½" Dia. Portable Circular Saw	150	68" Water
7½" Dia. Portable Circular Saw	150	68" Water
9½" Dia. Portable Circular Saw	150	68" Water
10" Dia. Portable Circular Saw	150	68" Water
Hand Electric Drill - Portable	75	68" Water
Hand Electric Drill with Hole Cutter	75	68" Water
Portable Belt Type Electric Sander	150	68" Water
Portable Vibratory Type Electric Sander	150	68" Water

*Portable Electric Circular Saws should be used with Vacuum Table.

Use plastic bag liner for waste container for sealed disposal of dust.

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SPECIFICATION NO. G-2

MANUFACTURER: Hoffman Air & Filtration Division
Clarkson Industries
103 Fourth Avenue
New York City, NY 10003
(202) 677-3600; Attn: Mr. Guy Cusumano

TYPE OF EQUIPMENT:

Hoffman Vacuum

MODEL NO.

No. 237 Special

EQUIPMENT SPECIFICATIONS:

No. 237 Special Hoffman

SIZE:

7½ hp unit

ELECTRICAL:

7½ hp TEFC, 110 V controls

440 volt, 3-phase, 60 cycle

50 ft. cable - conductor type

VACUUM:

2" pipe, 2 connections

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SPECIFICATION NO. G-3

MANUFACTURER: Spencer Turbine Company
Hartford, Connecticut
(203) 233-3621
Attn: Mr. Blair Alexander

TYPE OF EQUIPMENT:

Spencer Turbine Type Vacuum

MODEL NO.

P-190

EQUIPMENT SPECIFICATIONS:

150 SCFM at 6½" Mercury

Turbine type vacuum unit, Bulletin 190

SIZE:

150 SCFM at 6½" Mercury

ELECTRICAL:

Normally 220/440 V, 3-phase, 60 cycle

VACUUM:

150 SCFM at 6½" Mercury

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RULES AND REGULATIONS

§ 1910.93 Air contaminants.

TABLE Q-3—MINERAL DUSTS

Substance	Mppcf	Mg/MP
Silica:		
Crystalline:		
Quartz (respirable).....	250	10mg/MP
	%SiO ₂ +6	%SiO ₂ +2
Quartz (total dust).....		20mg/MP
		%SiO ₂ +3
Crystalline: Use the value calculated from the count or mass formula for quartz.		
Tremolite: Use the value calculated from the formula for quartz.		
Amorphous, including natural diatomaceous earth.....	20	80mg/MP
		%SiO ₂
Silicates (less than 1% crystalline-silica):		
Mica.....	20	
Serpentine.....	20	
Talc.....	20	
Bohl and cement.....	20	
Gypsum (natural).....	18	
Coal dust (respirable fraction less than 8% SiO ₂).....		2.5mg/MP
		10mg/MP
For more than 8% SiO ₂		%SiO ₂ +2
Inert or nuisance dust:		
Respirable fraction.....	15	5mg/MP
Total dust.....	60	18mg/MP

Note: Conversion factors—
 mppcf X 35.3 = million particles per cubic meter
 = particles per cc.

* Millions of particles per cubic foot of air based on impact sampler counted by light-field technique.

* The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.

As determined by the membrane filter method at 100% relative humidity.

* Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	99
2.5	75
3	40
3.5	25
10	0

The measurements under this note refer to the use of an ACP instrument. If the respirable fraction of dust is determined with a MRE, the figure here pointing to that of 2.1 Mg/MP in the table for coal dust is 1.5 Mg/MP.

2. A new § 1910.93a is added to Part 1910, reading as follows:

§ 1910.93a Asbestos.

(a) **Definitions.** For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) **Permissible exposure to airborne concentrations of asbestos fibers.** (1) **Standard effective July 7, 1972.** The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(2) **Standard effective July 1, 1975.** The 8-hour time-weighted average airborne concentrations of asbestos fibers

to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(3) **Ceiling concentration.** No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(c) **Methods of compliance.** (1) **Engineering methods.** (i) **Engineering controls.** Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) **Local exhaust ventilation.** (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) **Particular tools.** All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scrapers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) **Work practices.** (i) **Wet methods.** Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) **Particular products and operations.** No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) **Spraying, demolition, or removal.** Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d) (2) (iii) of this section and with special clothing in accordance with paragraph (d) (3) of this section.

(d) **Personal protective equipment.** (1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(2) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section:

(iii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or infeasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iv) In emergencies.

(2) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

(3) Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (1), (ii), (iii), and (iv) of this subparagraph.

(i) **Air purifying respirators.** A reusable or disposable air purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) **Powered air purifying respirators.** A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in subdivision (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) **Type "C" supplied-air respirators, continuous flow or pressure-demand class.** A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) **Establishment of a respirator program.** (a) The employer shall establish a respirator program in accordance with

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the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2-1969, which is incorporated by reference herein.

b. See § 1910.6 concerning the availability of ANSI Z88.2-1969 and the maintenance of an historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(c) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing: 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 for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) Change rooms: (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) Clothes lockers: The employer shall provide two separate lockers or containers for each employee, one separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) Laundering: (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employee who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (e) of this section.

(e) Method of measurement: All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 X (magnification) (4 millimeter objective) with phase contrast illumination.

(f) Monitoring—(1) Initial determinations. Within 6 months of the publication of this section, every employer shall cause every place of employment

where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) Personal monitoring—(i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and patterns. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) Environmental monitoring—(i) samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and patterns. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) Employee observation or monitoring. Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(5) Caution signs and labels. (i) Caution signs. (a) Posting. Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) Sign specifications. The warning signs required by subdivision (1) of this

subparagraph shall conform to the requirements of 20" x 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

Legend	Notation
Asbestos	1" Sans Serif, Gothic or Block.
Dust Hazard.....	1/2" Sans Serif, Gothic or Block.
Avoid Breathing Dust...	1/4" Gothic.
Wear Assigned Protective Equipment.	1/4" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	1/4" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) Caution labels—(i) Labeling. Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(ii) Label specifications. The caution labels required by subdivision (1) of this subparagraph shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION
Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause Serious Bodily Harm

(iii) Housekeeping—(1) Cleaning. All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) Waste disposal. Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(4) Recordkeeping—(i) Exposure records. Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 3 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National

Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) *Employee access.* Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which indicates the employee's own exposure to asbestos fibers.

(3) *Employee notification.* Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(4) *Medical examinations—(1) General.* The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV₁).

(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV₁).

(4) *Termination of employment.* The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV₁).

(5) *Recent examinations.* No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) *Medical records—(1) Maintenance.* Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examina-

tions. Records shall be retained by employers for at least 20 years.

(2) *Access.* The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

1. A new § 1910.19 is added to Subpart B of Part 1910, reading as follows:

§ 1910.19 Asbestos dust.

Section 1910.93a shall apply to the exposure of every employee to asbestos dust in every employment and place of employment covered by § 1910.12, § 1910.13, § 1910.14, § 1910.15, or § 1910.16, in lieu of any different standard on exposure to asbestos dust which would otherwise be applicable by virtue of any of those sections.

Effective date. Paragraph (b)(2) of § 1910.93a shall become effective July 1, 1976. All other provisions of § 1910.93a, 1910.93, and 1910.19 shall become effective July 1, 1972. The current emergency temporary standard remains in effect until July 1, 1972.

(Secs. 4, 8, 81 Stat. 1593, 1594; 29 U.S.C. 651, 657; 29 CFR 1910.1; Secretary of Labor's Order No. 12-71, 38 FR 8754)

Signed at Washington, D.C., this 2d day of June 1972.

G. C. GUENTHER,
Assistant Secretary of Labor.

[FR Doc.72-8574 Filed 6-6-72; 8:48 am]

Title 41—PUBLIC CONTRACTS AND PROPERTY MANAGEMENT

Chapter 9—Atomic Energy Commission

PART 9-1—GENERAL

Subpart 9-1.1—Procurement Regulations

MISCELLANEOUS AMENDMENTS

The changes made in AECPR Subpart 9-1.1, Procurement Regulations, have been made in order to establish the AECPR Temporary Regulations, which are a part of the AEC Procurement Regulations and the Federal Procurement Regulations System. The AECPR Temporary Regulations implement and supplement the FPR Temporary Regulations. They also contain policies and procedures initiated by the AEC which are to be effective for a period of 6 months or less. The AEC Procurement

Instruction section has been revised accordingly. Minor editorial changes have also been made.

1. Section 9-1.101 Scope of subpart, is revised to read as follows:

§ 9-1.101 Scope of subpart.

This subpart describes the Atomic Energy Commission Procurement Regulations and the AECPR Temporary Regulations. It also describes exclusions from the AECPR as contained in the AEC Procurement Instructions.

2. Section 9-1.102 Establishment of AEC Procurement Regulations, is revised to read as follows:

§ 9-1.102 Establishment of the AEC Procurement Regulations and the AECPR Temporary Regulations.

§ 9-1.102-1 AEC Procurement Regulations.

(a) The AEC Procurement Regulations (AECPR) are hereby established.

(b) These regulations implement and supplement the Federal Procurement Regulations (FPR) and are a part of the Federal Procurement Regulations System.

(c) The effective date of FPR issuances throughout AEC will be the date indicated in the respective issuances unless otherwise provided in the AEC Procurement Regulations.

(d) The effective date of AECPR issuances throughout AEC will be the date indicated in the respective issuances.

§ 9-1.102-2 AECPR Temporary Regulations.

(a) The AECPR Temporary Regulations are hereby established.

(b) These regulations implement and supplement the Federal Procurement Regulations Temporary Regulations. They also contain policies and procedures initiated by the AEC which are expected to be effective for a period of 6 months or less.

(c) The effective date of the FPR Temporary Regulations issuances throughout AEC will be the date indicated in the respective issuances unless otherwise provided in the AECPR Temporary Regulations.

(d) The effective date of the AECPR Temporary Regulations issuances throughout AEC will be the date indicated in the respective issuances.

(e) The AECPR Temporary Regulations are a part of the AEC Procurement Regulations and the Federal Procurement Regulations System. All references in the AEC Procurement Regulations or AECPR in § 9-1.103 through 9-1.109 of this subpart shall be deemed to include the AECPR temporary regulations.

3. Section 9-1.103 Authority, is revised to read as follows:

§ 9-1.103 Authority.

The AEC Procurement Regulations are prescribed by the General Manager, Assistant General Manager for Administration, or the Director, Division of Contracts of the AEC, pursuant to the authority of the Atomic Energy Act of 1954, and the Federal Property and Administrative Services Act of 1949.

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JOHNS-MANVILLE

GREENWOOD PLAZA
ENVIRONMENTAL CONTROL SYSTEMS DIVISION
ENVIRONMENTAL ENGINEERING DEPARTMENT
DENVER, COLORADO 80217

BOOSTER FAN - VACUUM CLEANING

B A S I C D E S I G N C R I T E R I A

AUGUST 29, 1972

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Environmental Engineering Dept., Denver
August 29, 1972

D. E. Hillier

cc
All Divisions
J. Goldfield
File

X24-9014
BOOSTER FAN - VACUUM CLEANING
BASIC DESIGN CRITERIA

Summary

Described below is a method of installing a vacuum system utilizing less costly components and existing dust collection and waste disposal equipment to effect a saving in initial investment of the order of 30% to 40% over commercial systems, plus reduced power, maintenance and handling costs.

Description

General The system consists of standard vacuum hoses and tools connected to a piping system (see dwg. 30383-4). Location of outlets should be governed by area of activity and the reach of standard 25 ft. hoses. The air is exhausted by an industrial fan and discharged into a nearby dust main, which carries the dusty air to an existing cloth dust collector. This can effect a considerable saving in piping, as well as eliminating the need for a separate dust collector to meet air pollution standards.

Selection of Pickups A basic system is sized to cover an area with up to 20 stations where a maximum of two vacuum stations are expected to be in use at one time. (400 cfm)

Additional stations should be handled by adding a parallel system for each two stations required, to maintain carrying velocities.

The usual maximum for one installation would be six stations simultaneous with a 900 cfm exhauster and approximately 60 stations total.

Fan The fan should be selected per the attached specification. The volume is selected as follows:

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August 29, 1972

- a) Basic system (2 stations in use): 400 cfm.
- b) Two parallel systems (4 stations in use): 600 cfm.
- c) Three parallel systems (6 stations in use): 900 cfm.

The total pressure is selected as follows:

- a) Maximum length of longest branch approx. 150'-200':
use 40" T.P. Water Gauge.
- b) Maximum length of longest branch approx. 250'-300':
use 60" T.P. Water Gauge.

Typical fan selections are:

Buffalo Forge, Type "RE", extra heavy wheel.
New York Blower, "Pressure Blower", steel wheel, Type P, Series N.
Lamson, Cast Iron Centrifugal Exhauster.

Dust Trap In highly abrasive situations, such as transite and cement board plants, a dust trap should be installed preceeding the fan. (See dwg. standard) This trap is sized to handle up to 900 cfm (the largest single system recommended).

Tools & Piping Typical tools and piping are called out on the attached bill of material sheet.

The quantity is normally what would be required by each system to allow convenient location to each operator, but not enough to encourage abuse by the use of more than two outlets simultaneously. The usual quantity is three or four sets of hoses and tools per basic system. Suppliers are Hoffman, Spencer, Lamson, etc.

Attachments

1. Typical Vacuum System - #30383-4.
2. Typical Methods of Dust Disposal - #30384-4 & #30385-4.
3. Material List and System Ratings - #30386-4.
4. Typical Fan Specification.
5. Dust Trap - Vacuum System - (Standard)

R. E. Fortin
R. E. Fortin

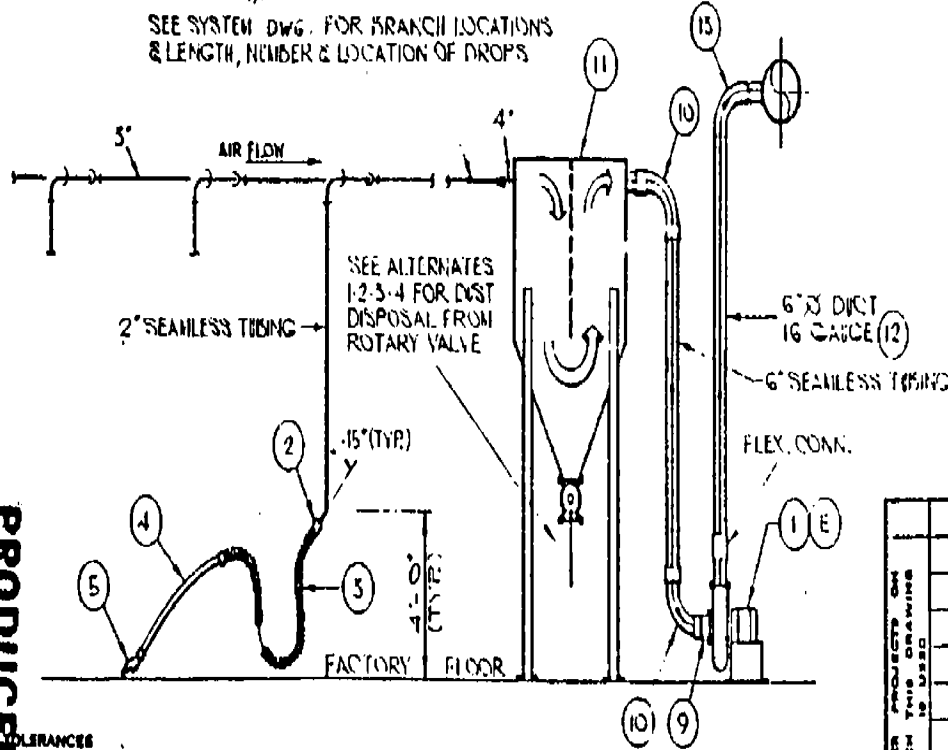
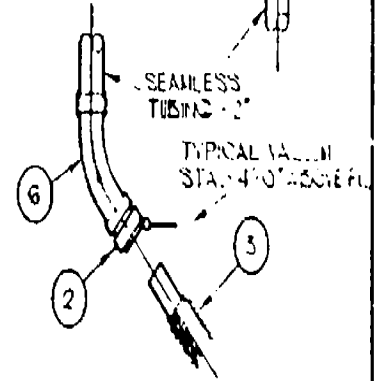
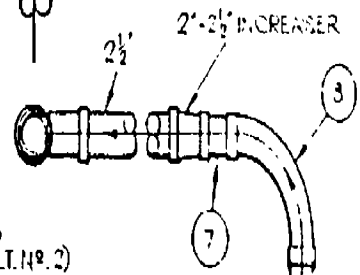
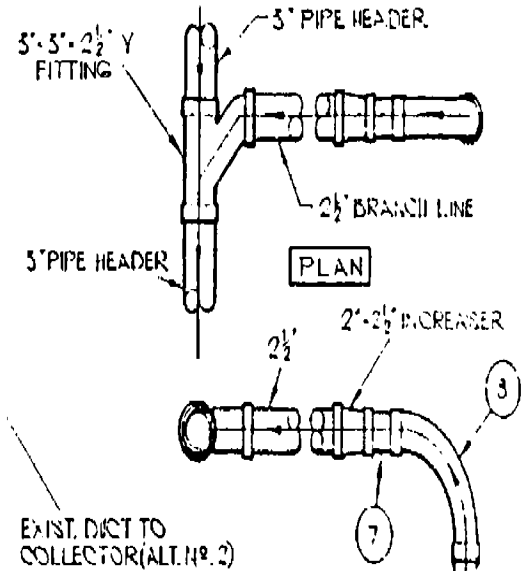
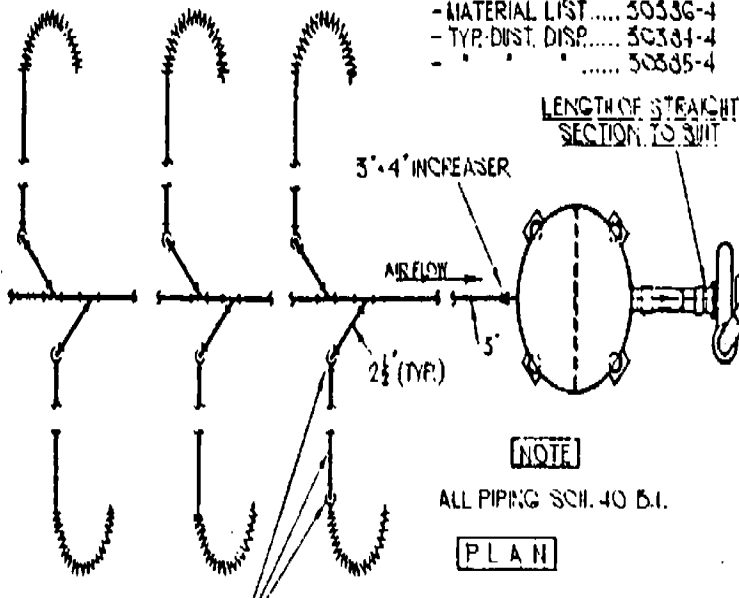
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30383-4

REFERENCE DRWG'S

- MATERIAL LIST 30386-4
- TYP. DUST DISP. 30384-4
- 30385-4



ELEVATION

TYPICAL VACUUM SYSTEM

ALL PLANTS

JOHNS-MANVILLE PRODUCTS CORPORATION
RESEARCH & ENGINEERING CENTER
MANVILLE, N. J.

SCALE 1" = 1'-0"	DATE 5/23/72	CLASS
DR BY VIGNERON	PROJECT NO. X24-9014	
CHK BY MTC 1-10-72	DRAWING NO. 30383-4	
APPR BY		

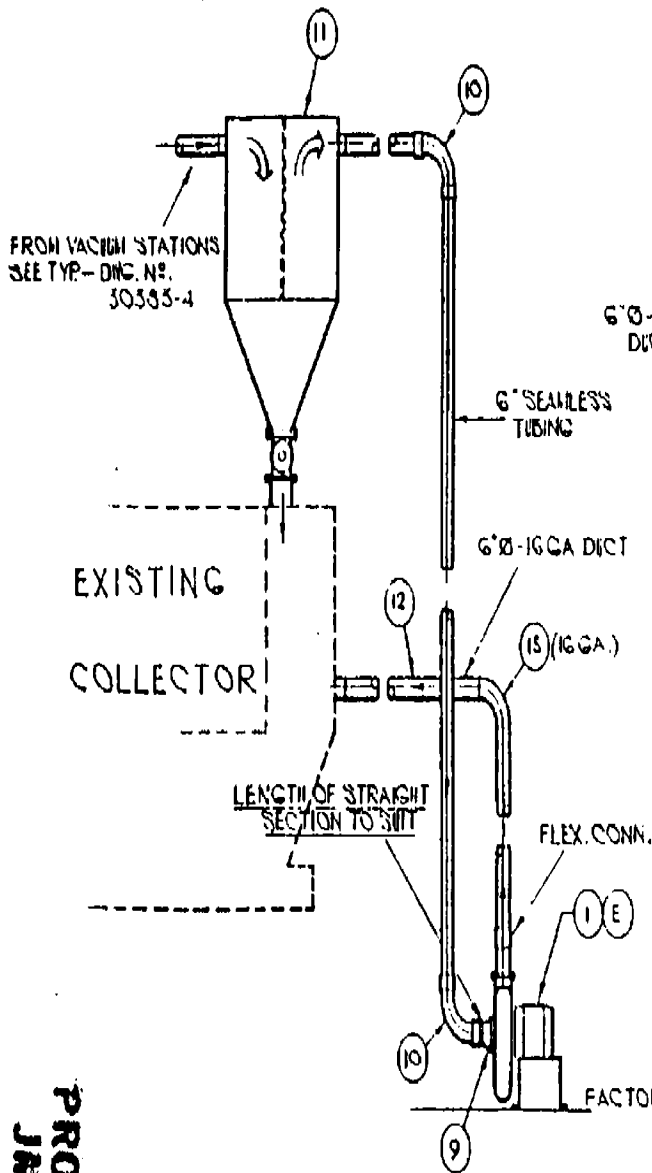
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TOLERANCES
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FRACTIONAL DIMENSIONS
DECIMAL DIMENSIONS

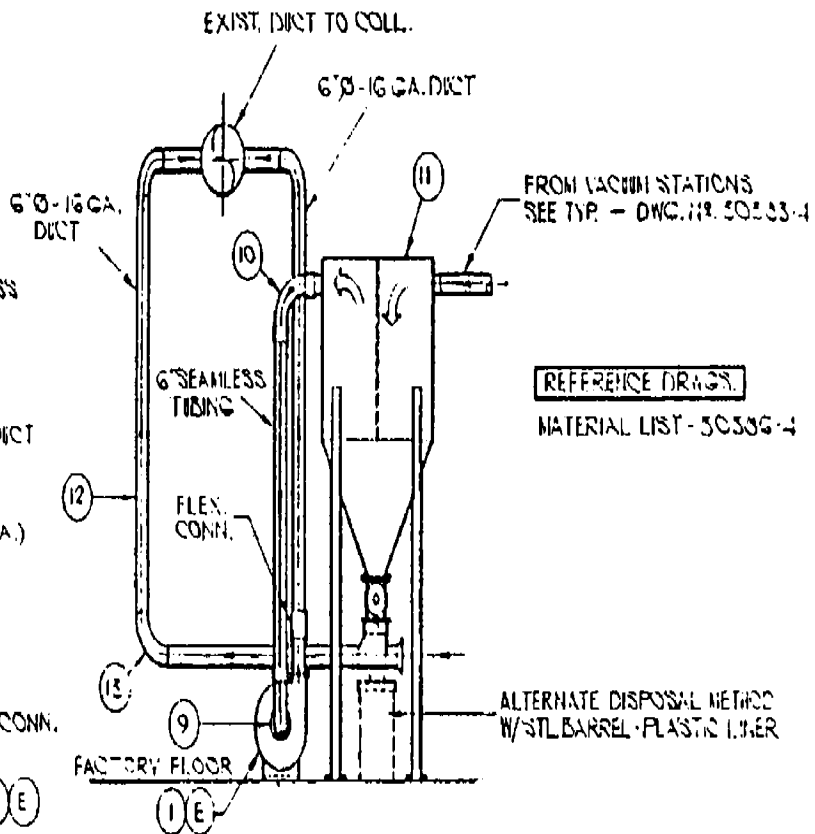
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E	I									A	F

ELEVATION

50354-4



ALTERNATE No. 1



ALTERNATE No. 2

REFERENCE DRWG.

MATERIAL LIST - 50354-4

TYPICAL METHODS -
DUST DISPOSAL

ALL PLANTS

SHEET 1 of 2

JOHNS-MANVILLE PRODUCTS CORPORATION
RESEARCH & ENGINEERING CENTER
MANVILLE, N. J.

SCALE 1" = 1'-0"	DATE 3/20/72	PLANT
DR. BY VIGNERON	PROJECT NO. X24-9014	
CHK BY JMC 7/1/72	REVISION NO.	
APPR. BY [Signature]		50354-4

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TOLERANCES

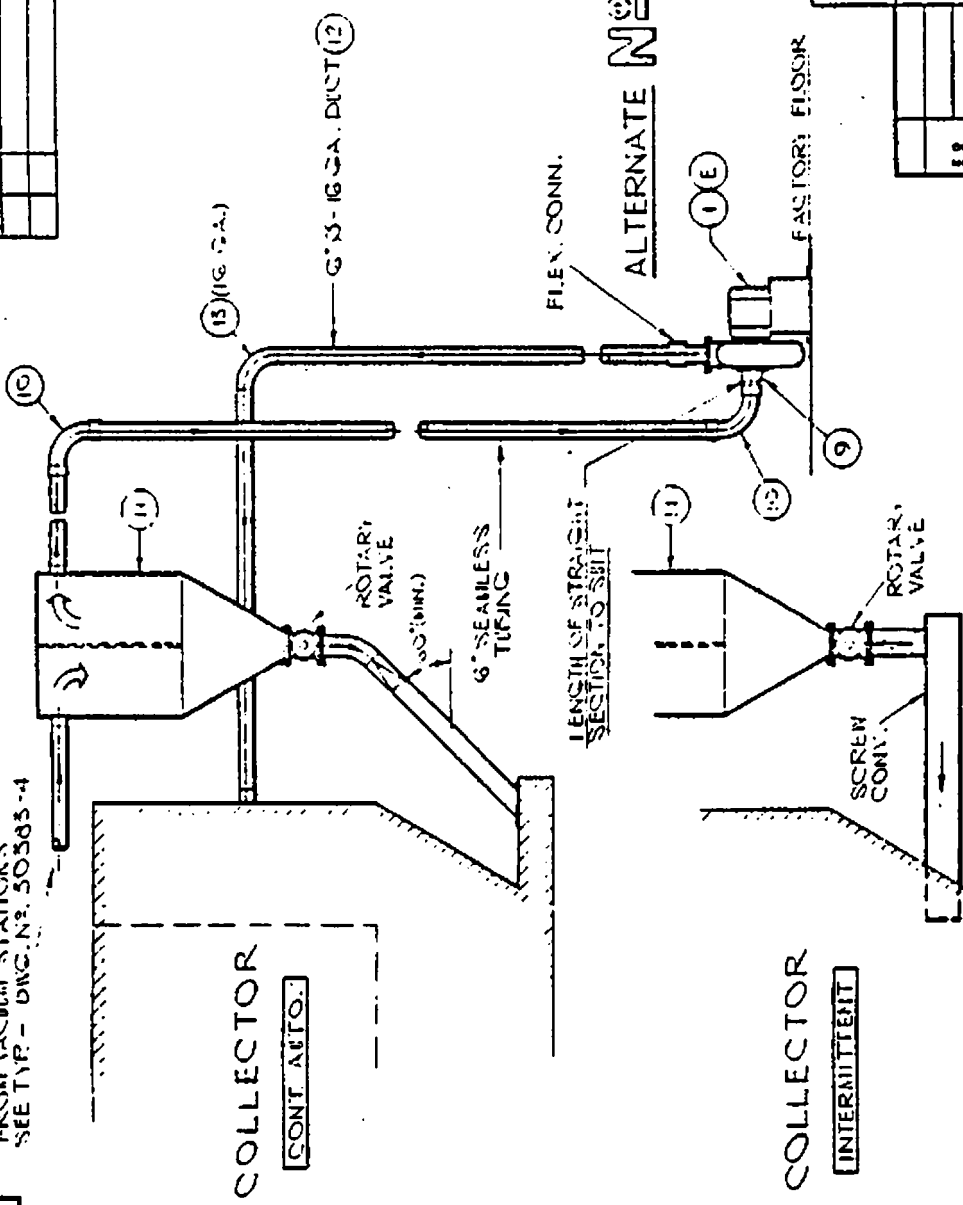
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FRACTIONAL DIMENSIONS ±
DECIMAL DIMENSIONS ±

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30354

FROM VACUUM STATIONS
SEE TYP - DWG. NO. 30353-4

NO.	DESCRIPTION	DWG. NO.
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TOLERANCES
UNLESS OTHERWISE NOTED
FRACTIONAL DIMENSIONS =
DECIMAL DIMENSIONS =

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E	E	E	E	E	E	E	E	E	E	E	E

TYPICAL METHODS
DUST DISPOSAL

ALL PLANTS

JOHN MANVILLE PRODUCTS CORPORATION
RESEARCH & ENGINEERING CENTER
MANVILLE, N.J.

DATE	1-1-0	DATE	2/22/72	DATE	1-1-0
BY	VICHERS	PROJECT NO.	X24-9014	DATE	1-1-0
CHKD BY	THE	REVISED NO.	30355-4	DATE	1-1-0
APP'D BY				DATE	1-1-0

OTHER PRODUCTS OR
MATERIALS NOTED
IN USED

30583-4

⚠ RATINGS

STANDARD SYSTEM

NO. STATIONS BEAC. USED	EXTREME DISTANCE	CAPACITY & TOTAL PRESS.
TWO	150 FT.	500 CFM-40"

TWO PARALLEL SYSTEMS

FOUR	150 FT.	600 CFM-40"
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THREE " " " "

SIX	150 FT.	900 CFM-40"
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EXTENDED SYSTEM

TWO	300 FT.	500 CFM-60"
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FOUR	300 FT.	600 CFM-60"
------	---------	-------------

SIX	300 FT.	900 CFM-60"
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⚠ QUANTITIES LEFT OPEN IN MATERIAL LIST
WILL BE DETERMINED TO SUIT SPECIFIC SYSTEMS



QTY	NO. NOTED	DESCRIPTION	DWG. NO.
		FAN - BUFFALO, LANSON, CLARACE, NEW YORK.	
1	1	BLOWER, OR EQUAL, LOW-VOLUME, HIGH- PRESSURE, DIRECT-CONN'D., ARR. NO. 4.	
2	-	INLET VALVE - HOFFMAN NO. 59-465 OR EQUAL.	
3	-	HOSE - FLEXIBLE, REINFORCED 1/2" STEEL NIPPLES, 25 FT. L.G., HOFFMAN STYLE VF OR EQUAL.	
4	-	FLOOR ROD, CURVED, 2" I.D. FEMALE SLIP - JOINTS, HOFFMAN NO. 59-447 OR EQUAL.	
5	-	FLOOR NOZZLE, GULPER STYLE, 2" O.D. MALE END, HOFFMAN NO. 58-410 OR EQUAL.	
6	-	ELBOW, 2 1/8" BELL END x 2" FPT, STD. RADUS, 45° HOFFMAN NO. SA-2011 OR EQUAL.	
7	-	ADAPTER, MALE, 2" PIPE THRD. x 2 1/8" NIPPLE 4" L.G., HOFFMAN NO. SA-202 OR EQUAL.	
8	-	ELBOW, 2 1/8" BELL ENDS, STD. RADUS, 90° HOFFMAN NO. S-202 OR EQUAL.	
9	1	FLEXIBLE CONNECTION, 6" Ø I.D., FLANGED, NEW YORK BLOWER CO. OR EQUAL.	
10	-	ELBOW, 6" BELL ENDS, STD. RADUS, 90° HOFFMAN NO. S-602 OR EQUAL.	
11	1	DUST TRAP - J-M STD.	
12	-	DUCT CONSTR. " GAUGE AS NOTED	D-201.1
13	-	ELBOW, RD., " " "	D-202.3-1
E	-	DIRECT CONN'D., OPEN DRIP-PROOF MOTOR	

MATERIAL LIST AND SYSTEM RATINGS

ALL PLANTS

JOHN MANVILLE PRODUCTS CORPORATION
RESEARCH & ENGINEERING CENTER
BAYVILLE, N. J.

FILE ~	DATE 1/20/72	CLARK
DR. BY VIGNERON	PROJECT NO.	X24-9014
CHK. BY JMK P.M. 72	DRAWING NO.	30583-4
APP. BY EJS		

OTHER PRODUCTS OR
SERVICES THAT MAY BE
USED

REDUCED
JAN - 83

TOLERANCES

UNLESS OTHERWISE NOTED
FRACTIONAL DIMENSIONS ±
DECIMAL DIMENSIONS ±

01	02	03	04	05	06	07	08	09	10	11	12
E	I									A	F

