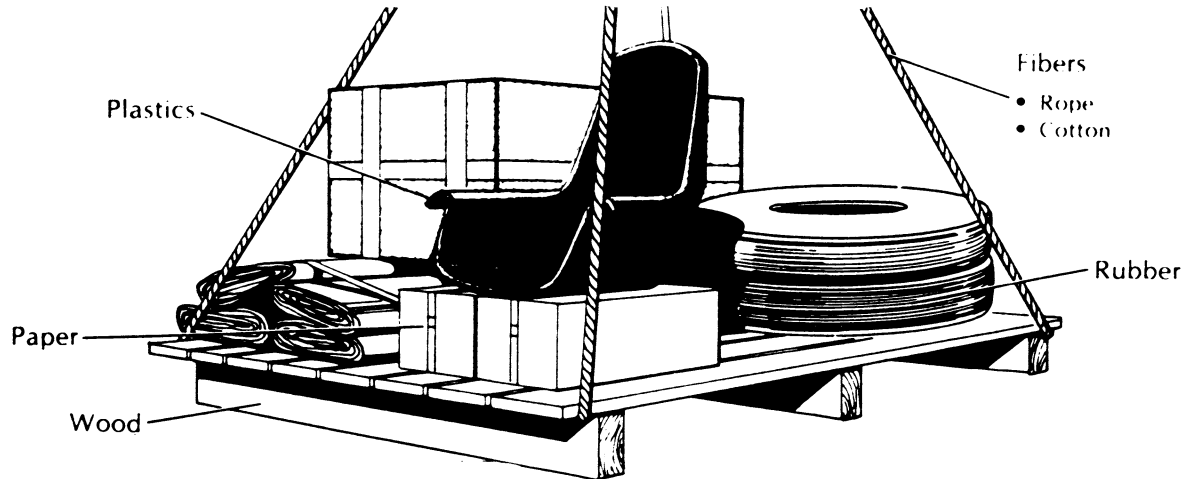
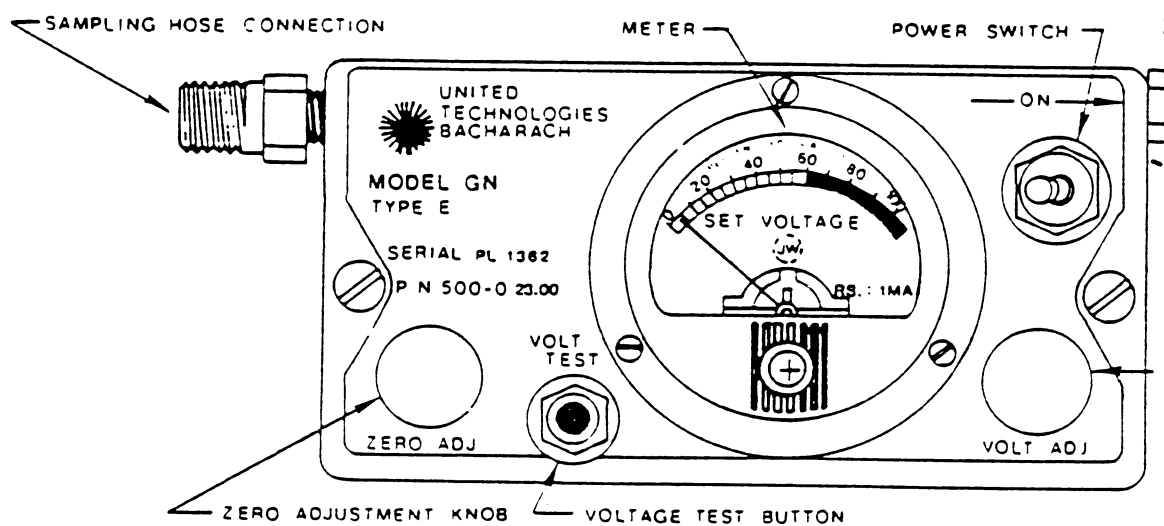


CHAPTER 5 SAFETY

SF-0001

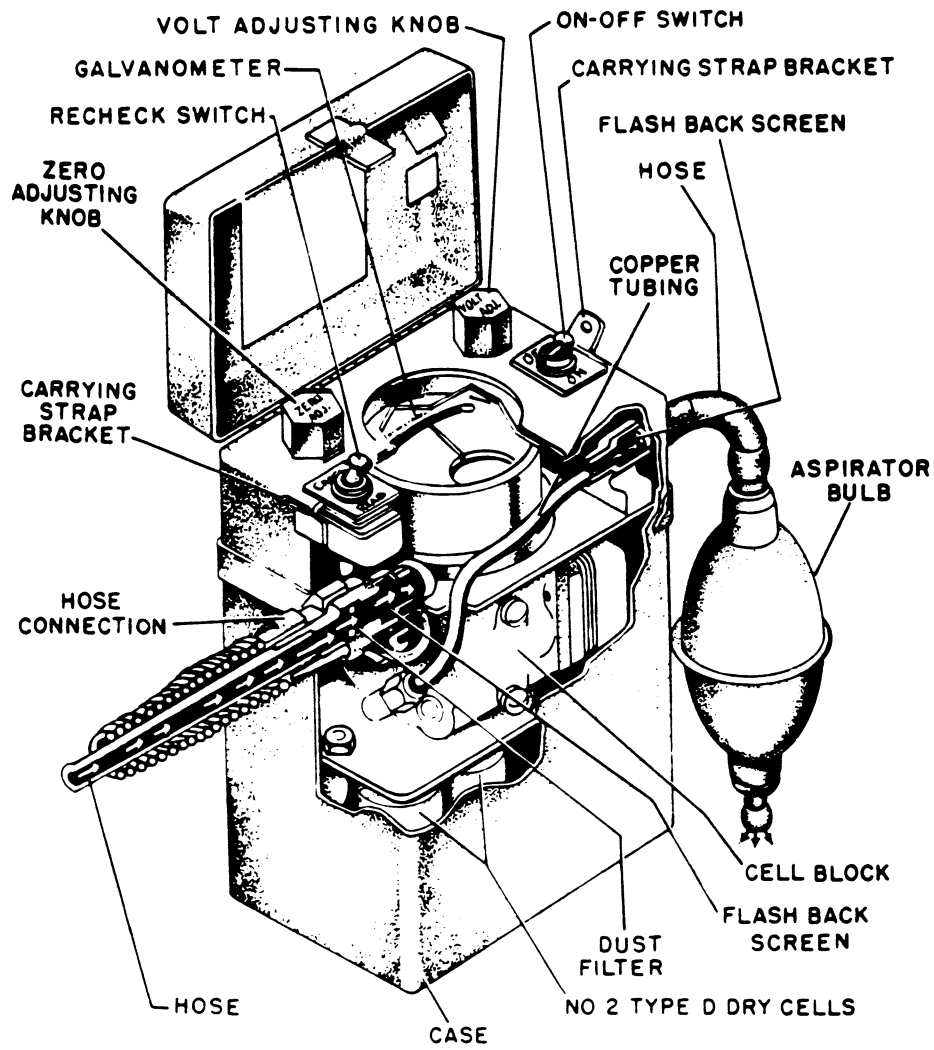


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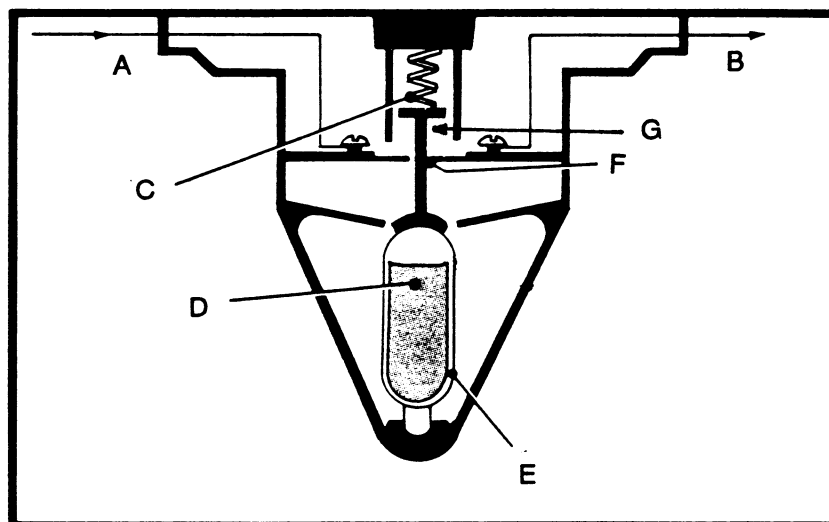


5-1

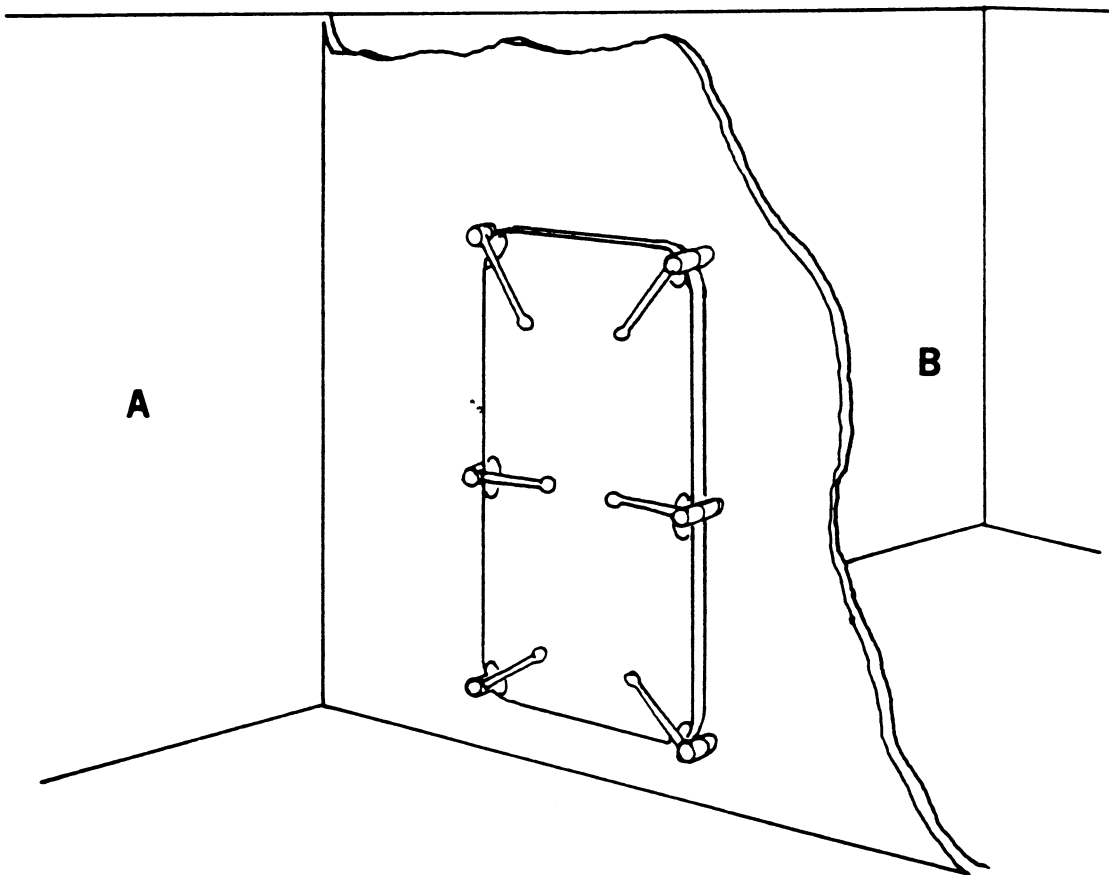
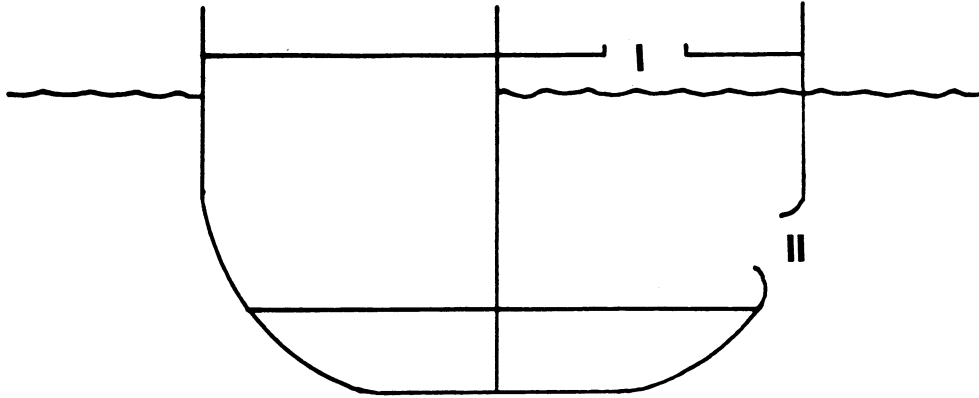
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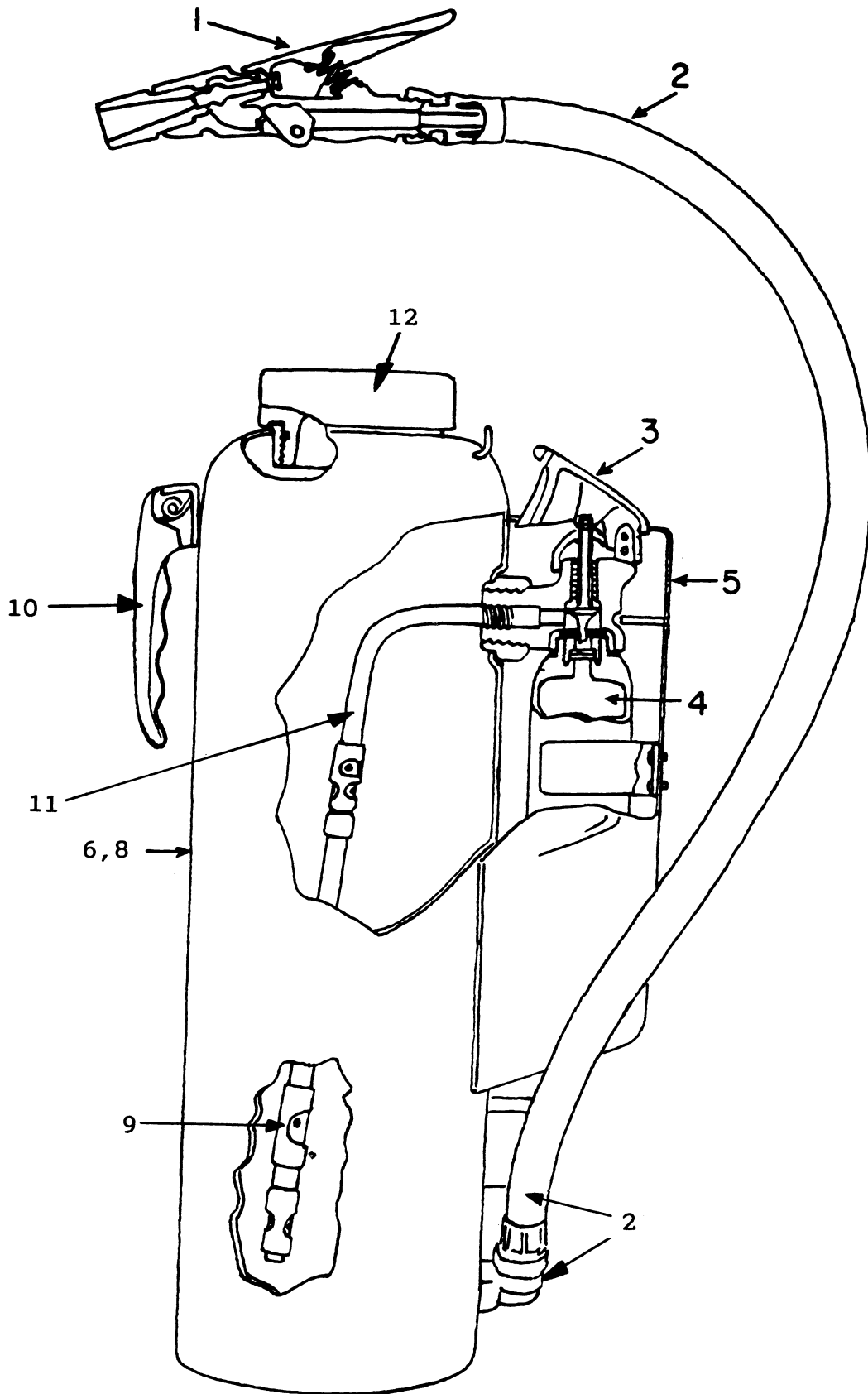
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SF-0005

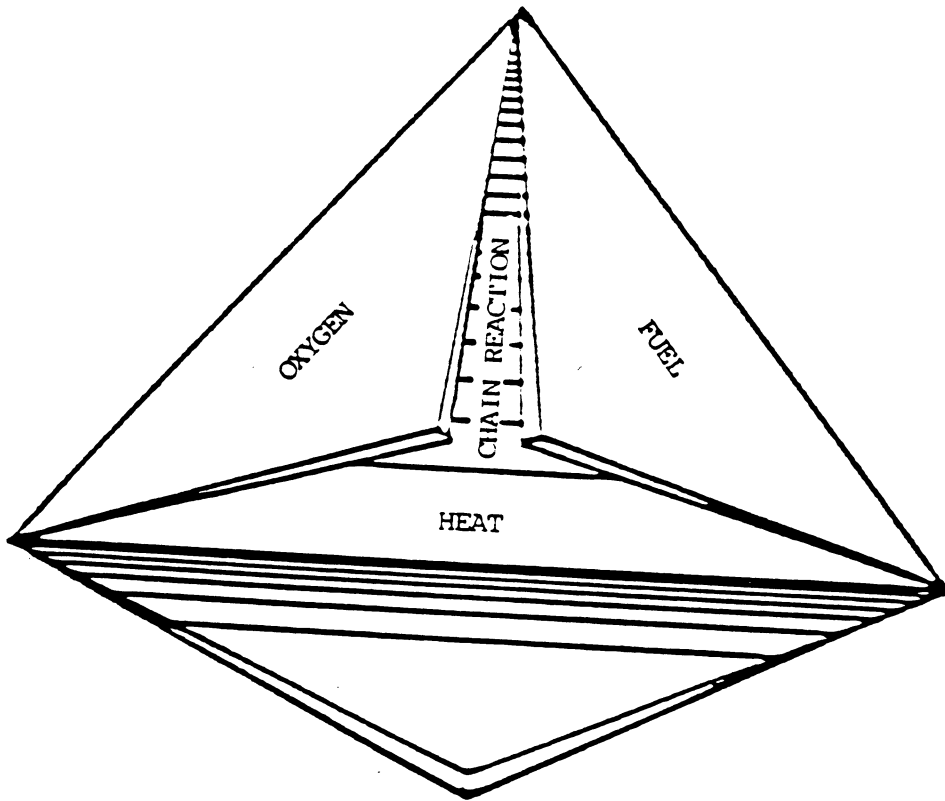


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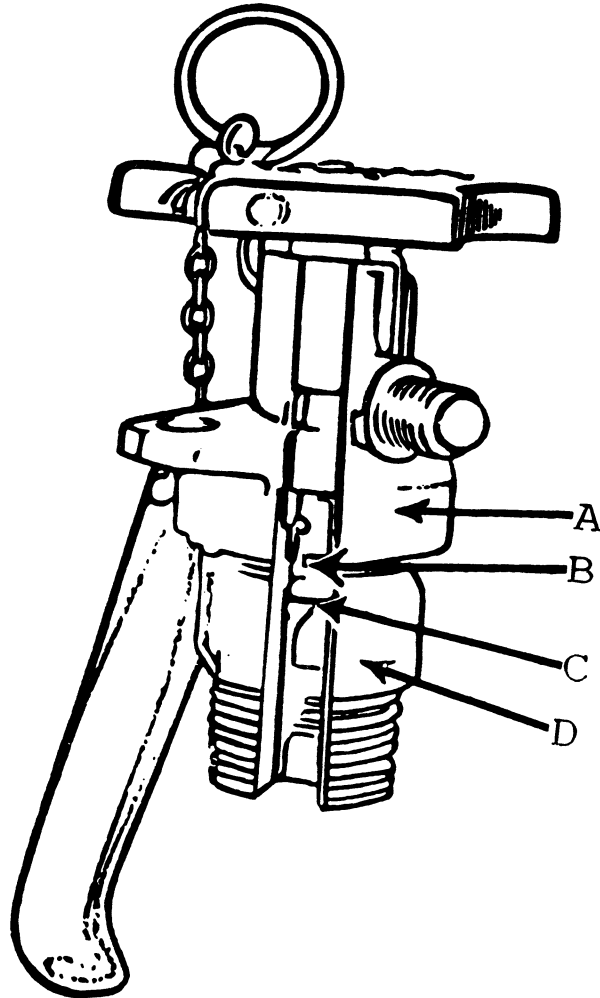


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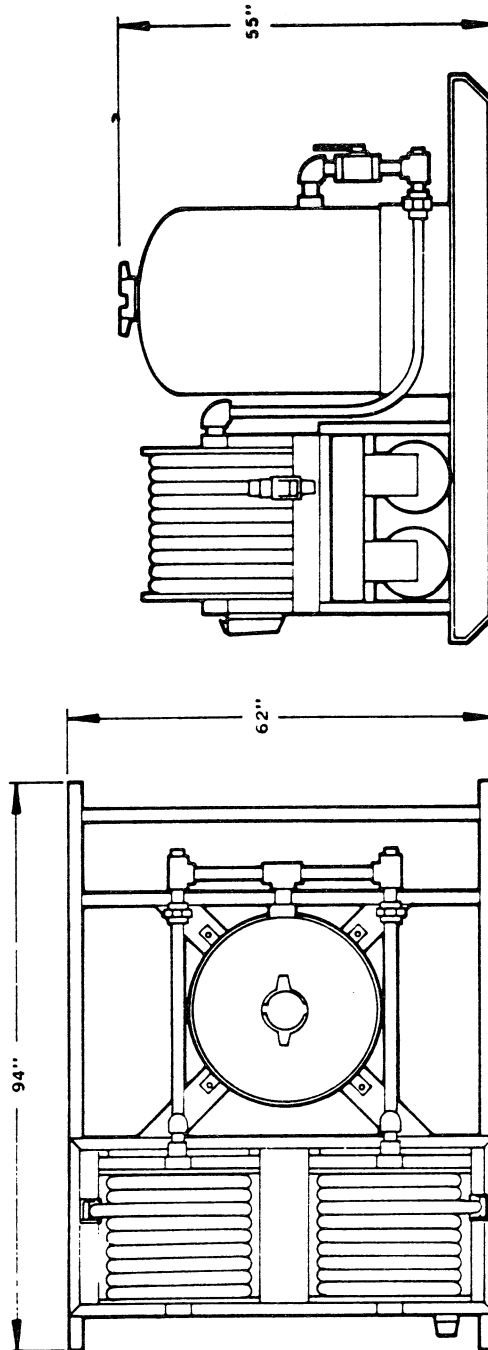
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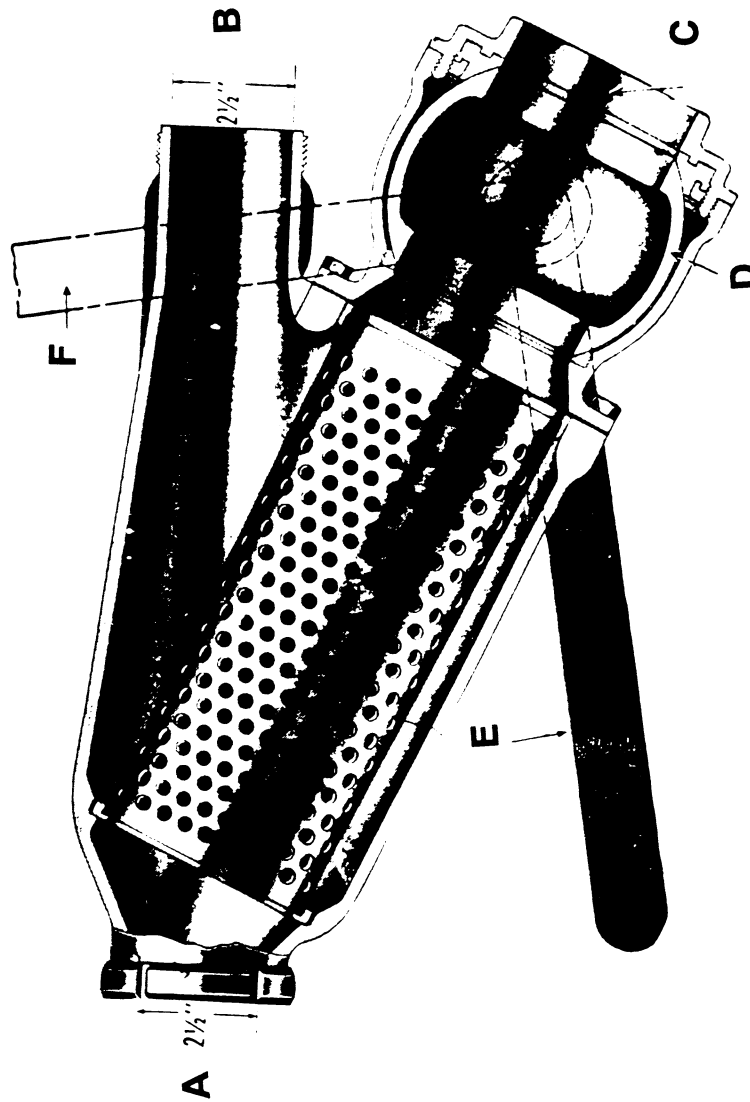
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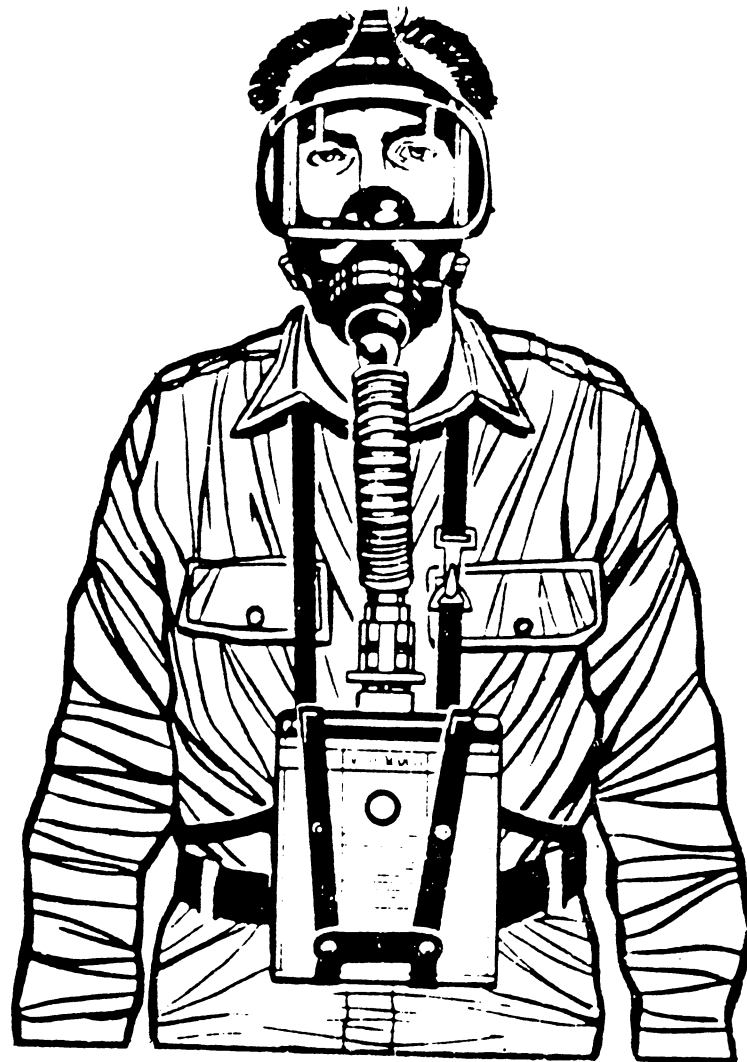
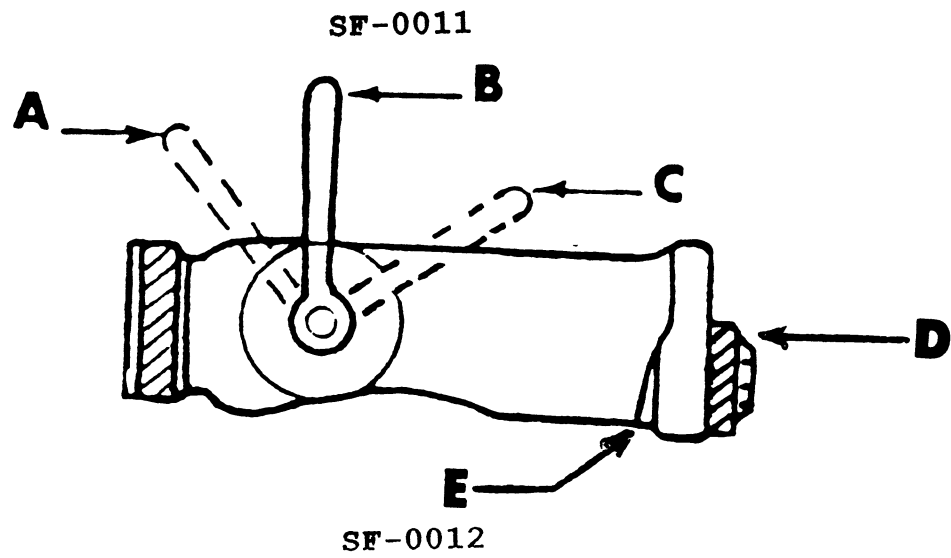


SF-0009



SF-0010





SF-0013

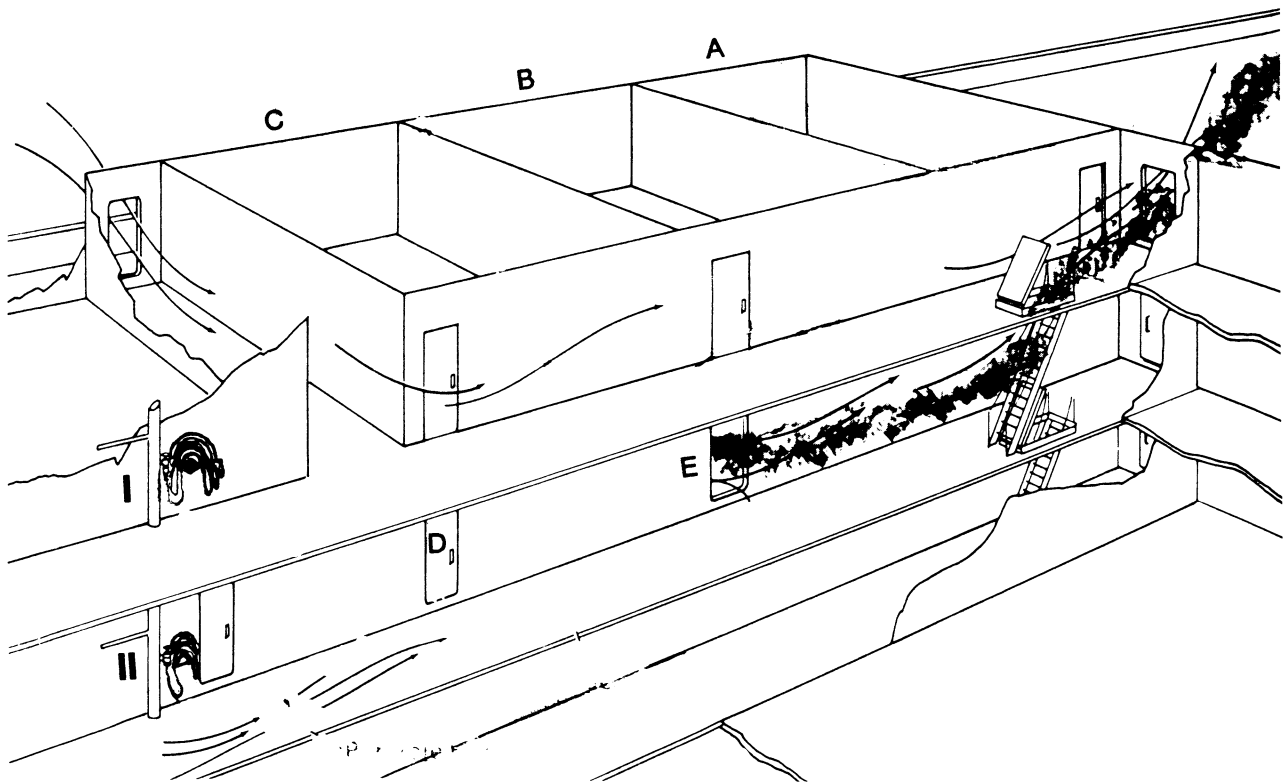


FIG. 1

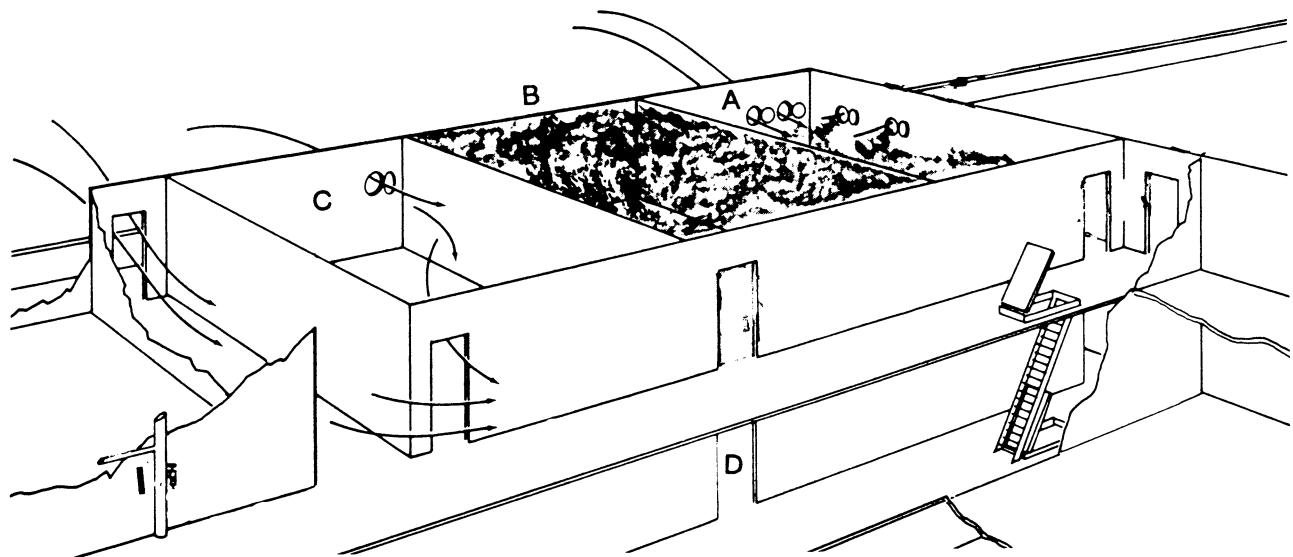
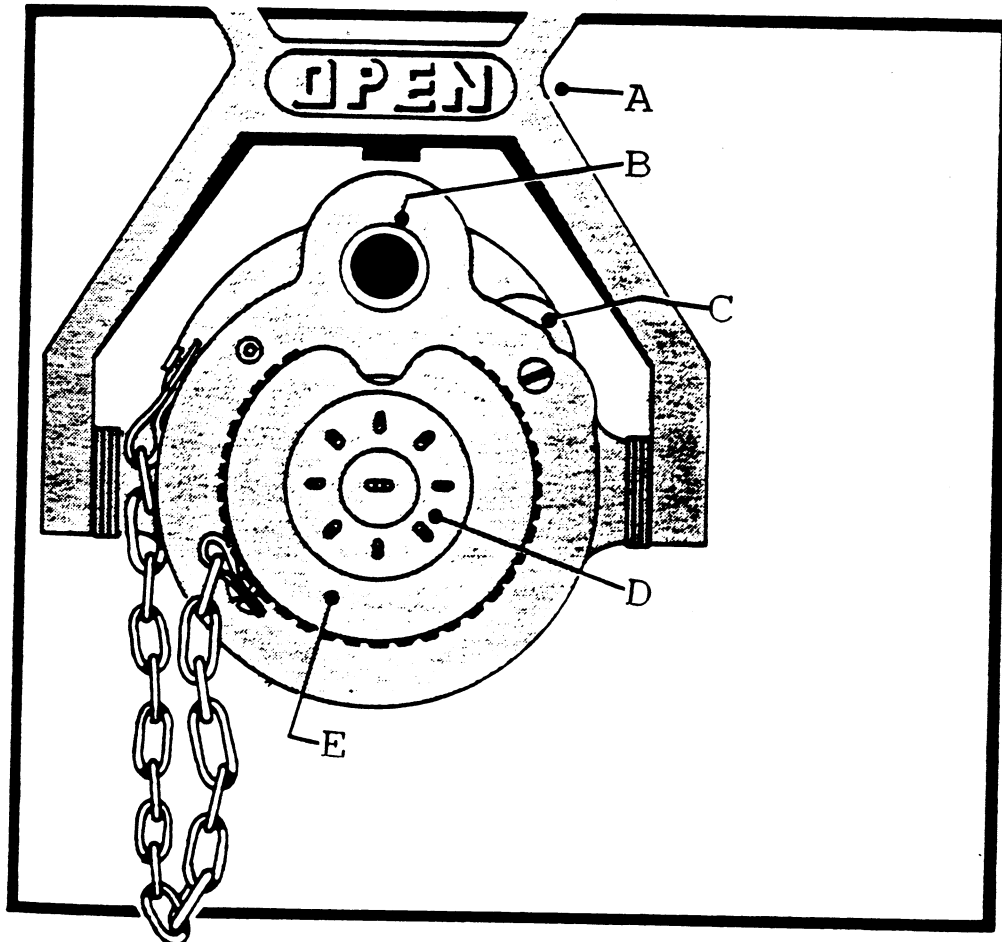


FIG. 2

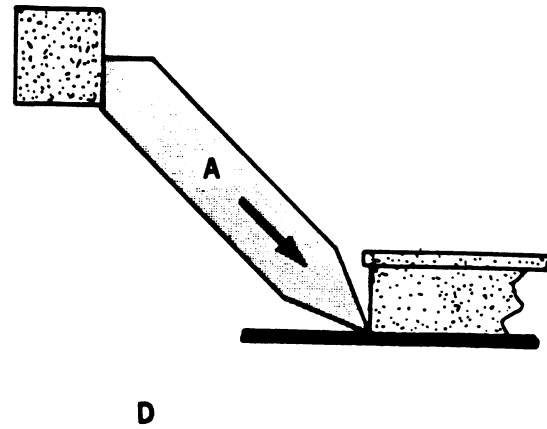
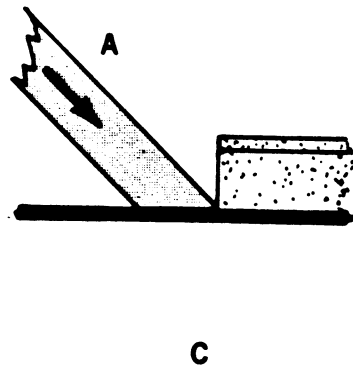
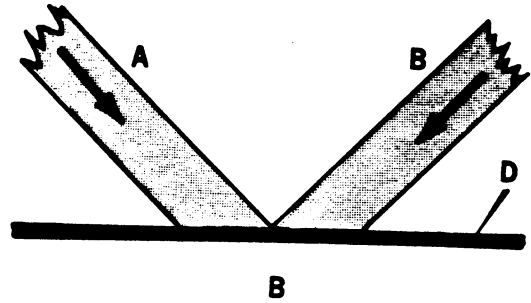
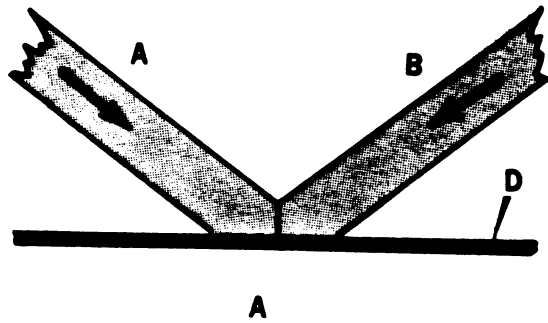
SF-0014

CYLINDER SERIAL NO.	TARE WEIGHT	GROSS WEIGHT	DATE	INSPECTOR
101	175	275	5-5-81	J.P.
102	174	269	5-5-81	J.P.
103	176	264	5-5-81	J.P.
104	176	268	5-5-81	J.P.
105	176	275	5-5-81	J.P.
106	174	265	5-5-81	J.P.
107	175	272	5-5-81	J.P.
108	176	265	5-5-81	J.P.
109	174	271	5-5-81	J.P.
110	175	272	5-5-81	J.P.

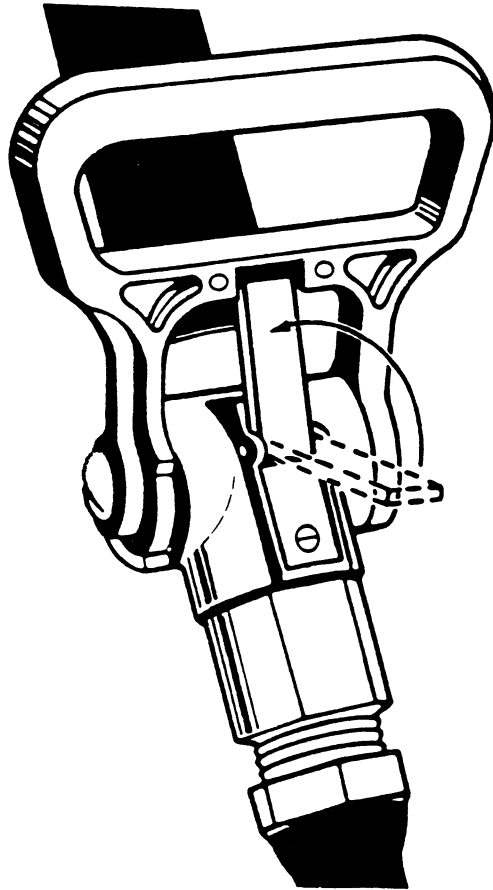
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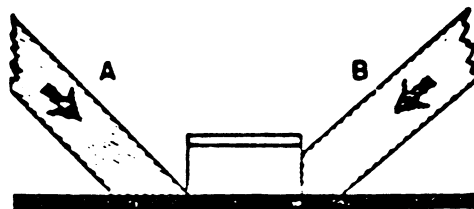
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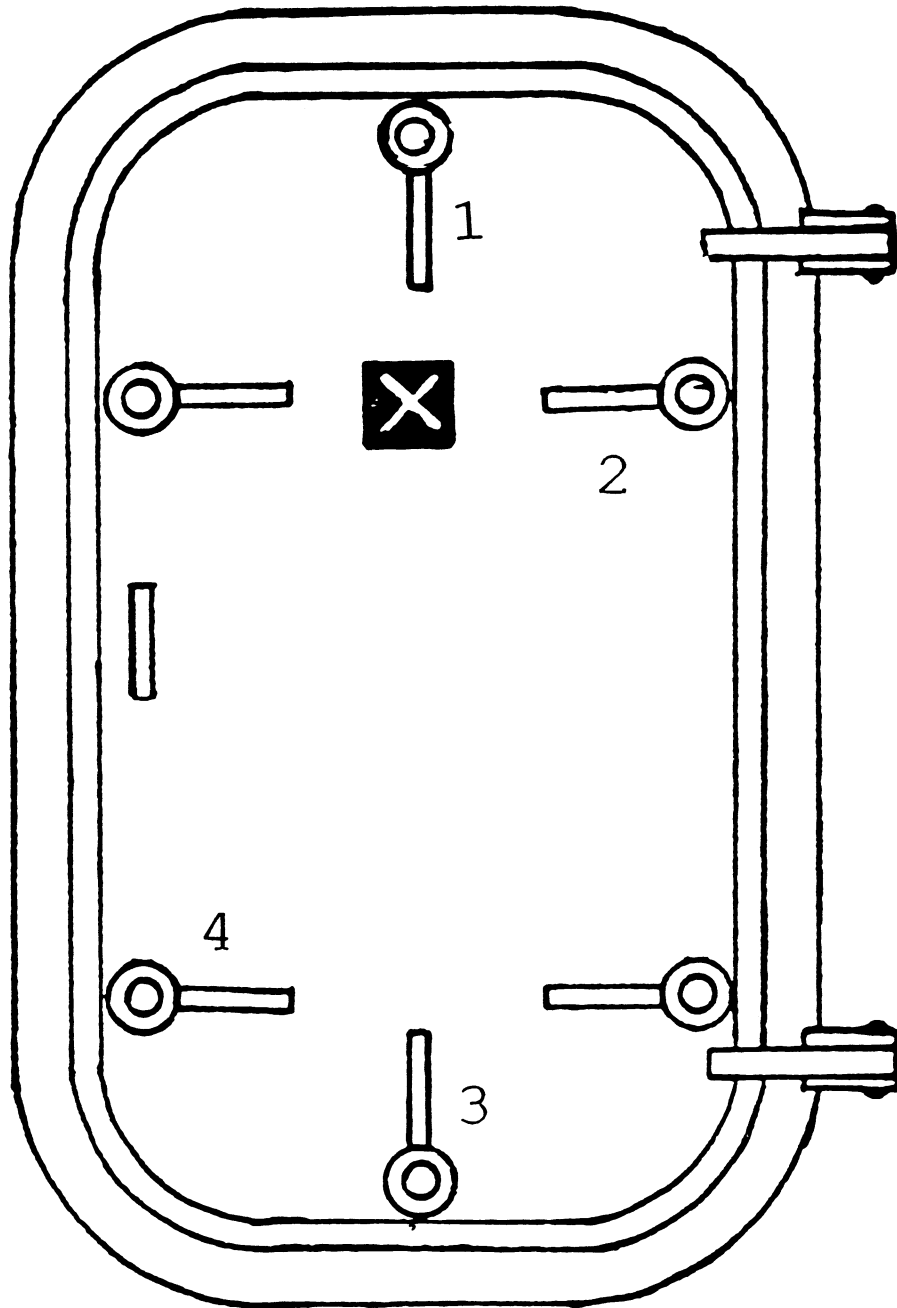
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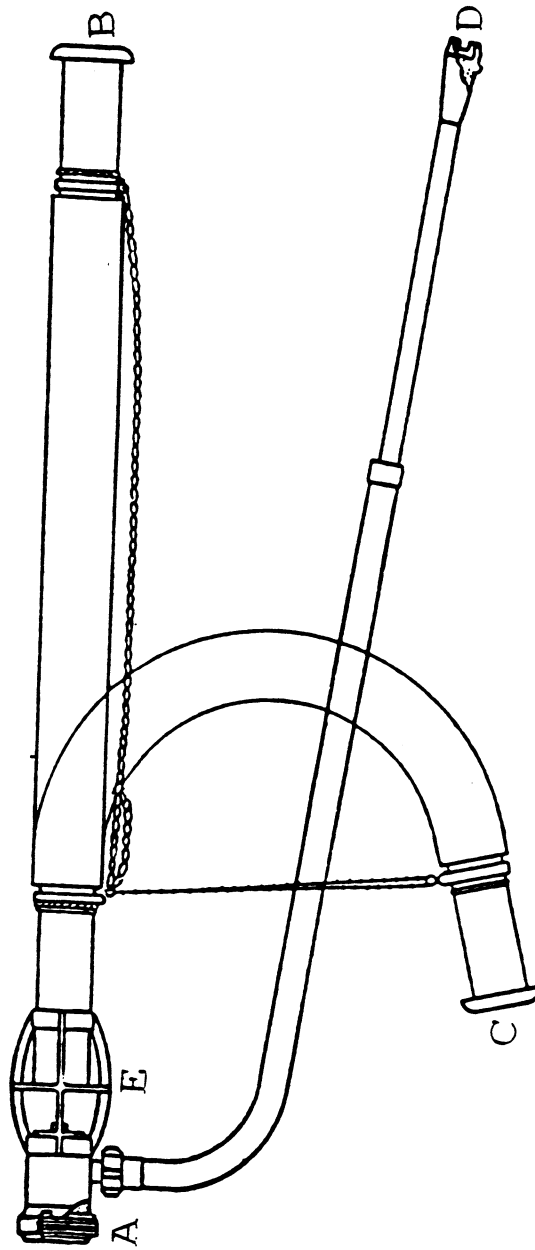
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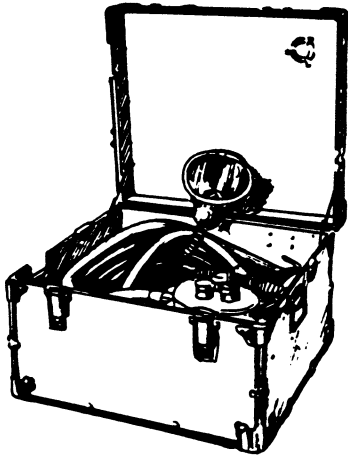
SF-0019



SF-0020



SF-0021



A



B



C



D

SF-0022



1



2



3

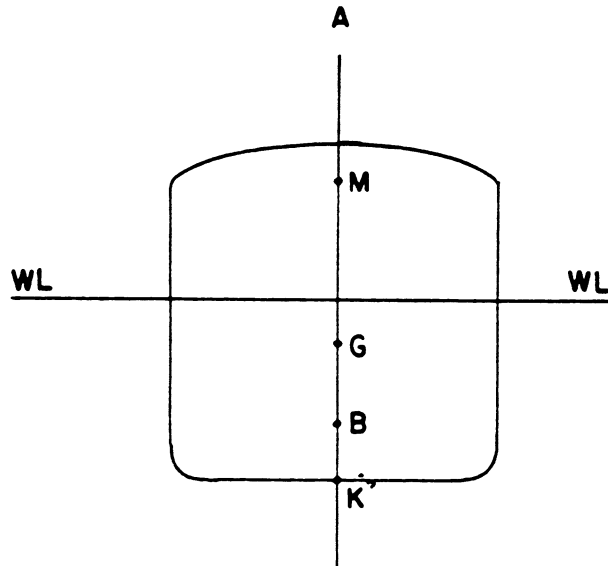


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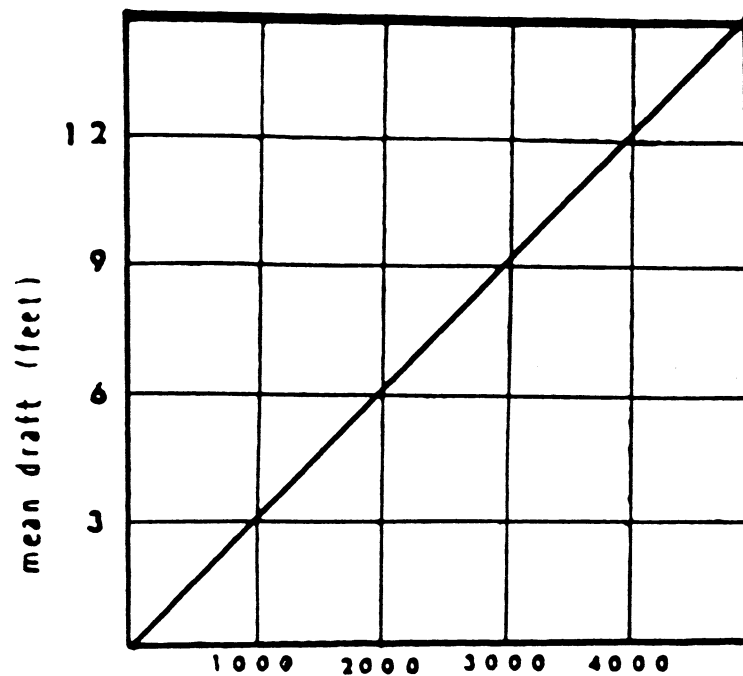
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SF-0023



SF-0024

DIAGRAM A

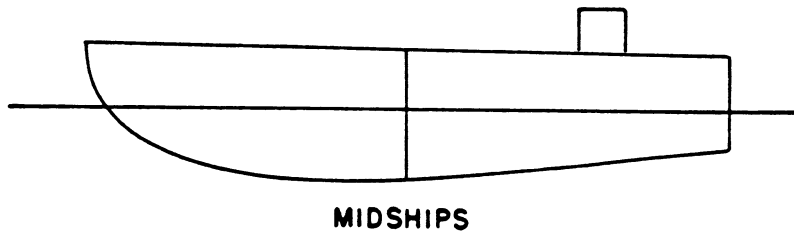


scale of tons
displacement

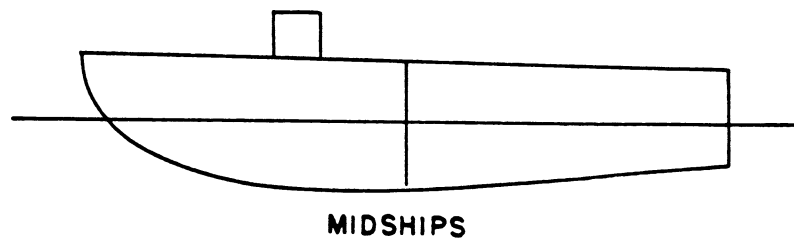
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SF-0025

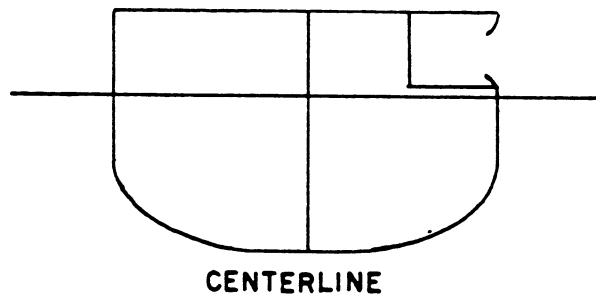
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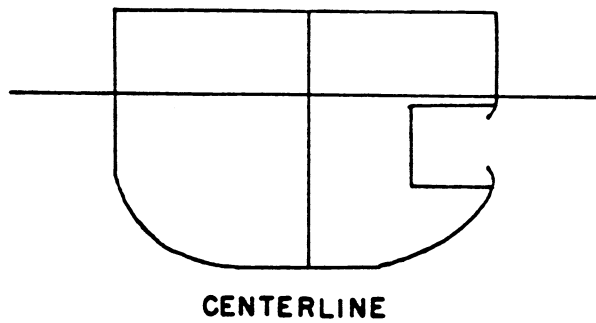
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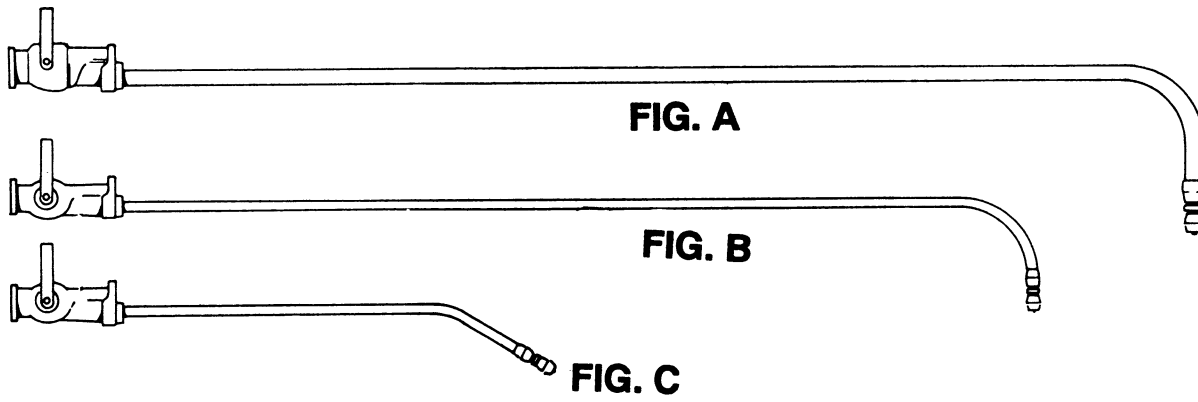
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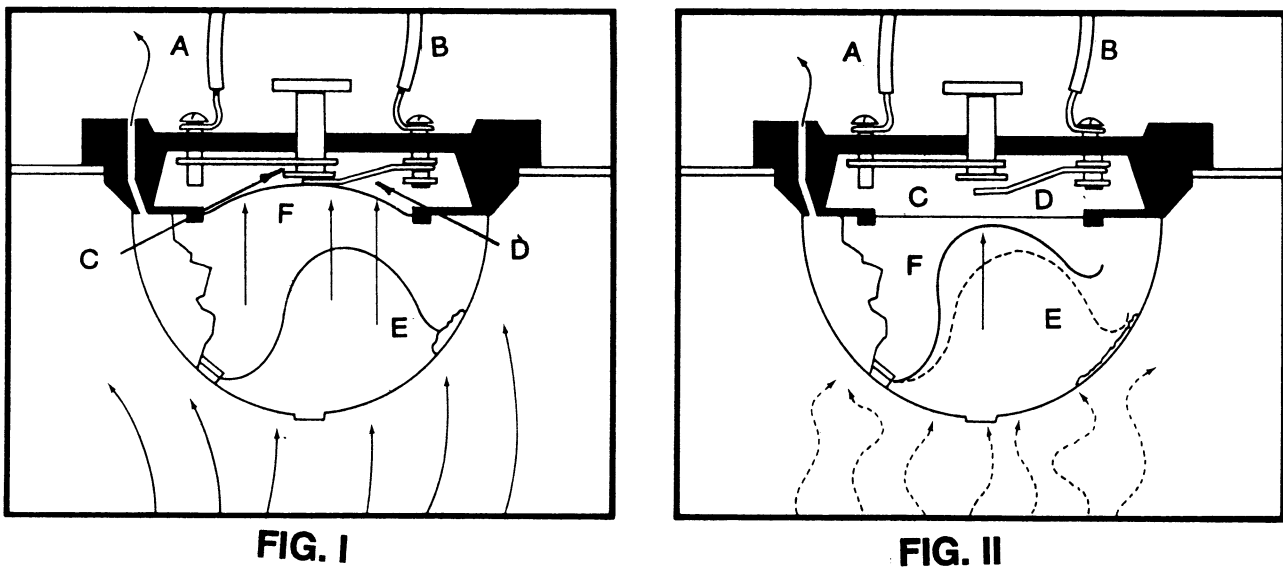
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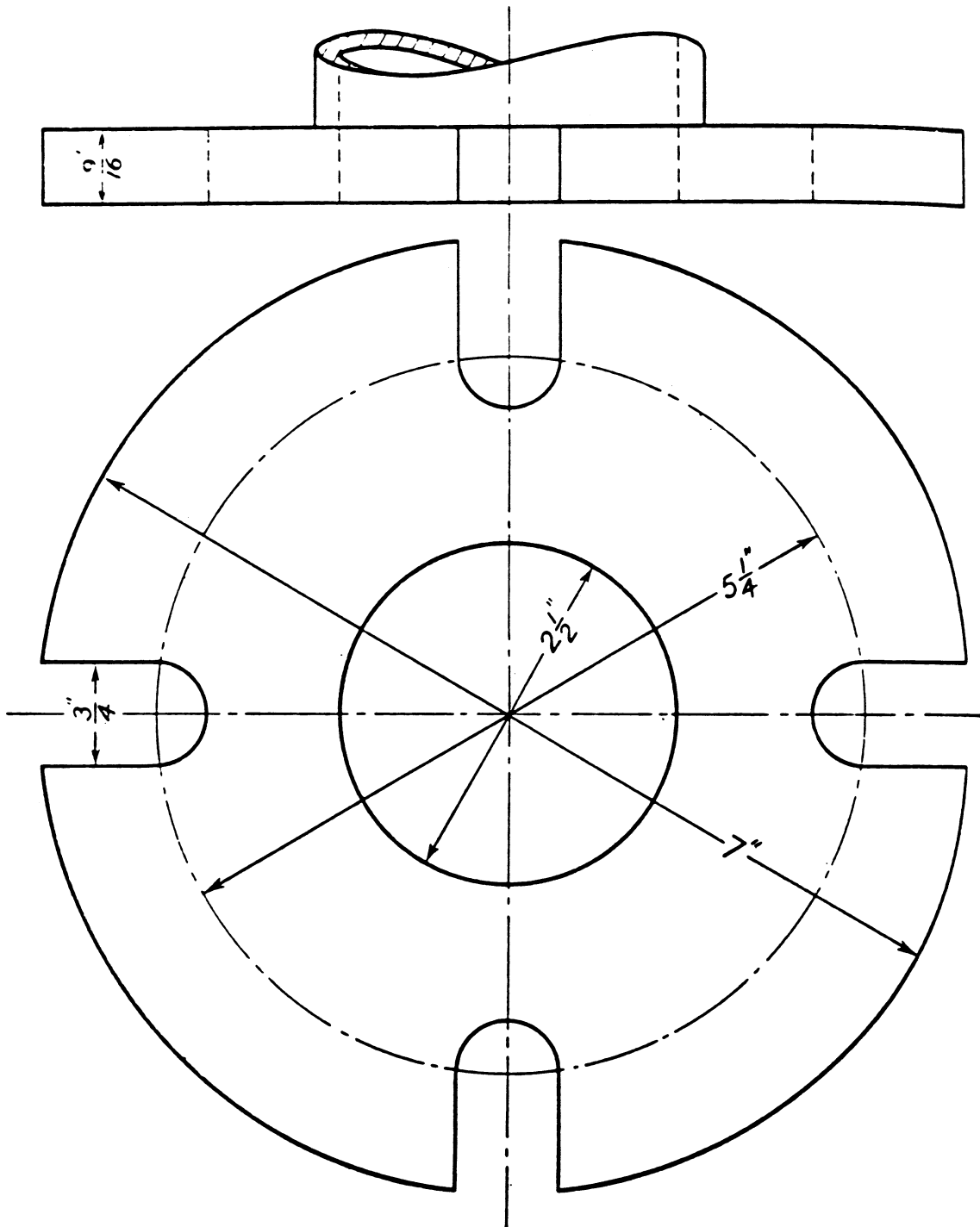
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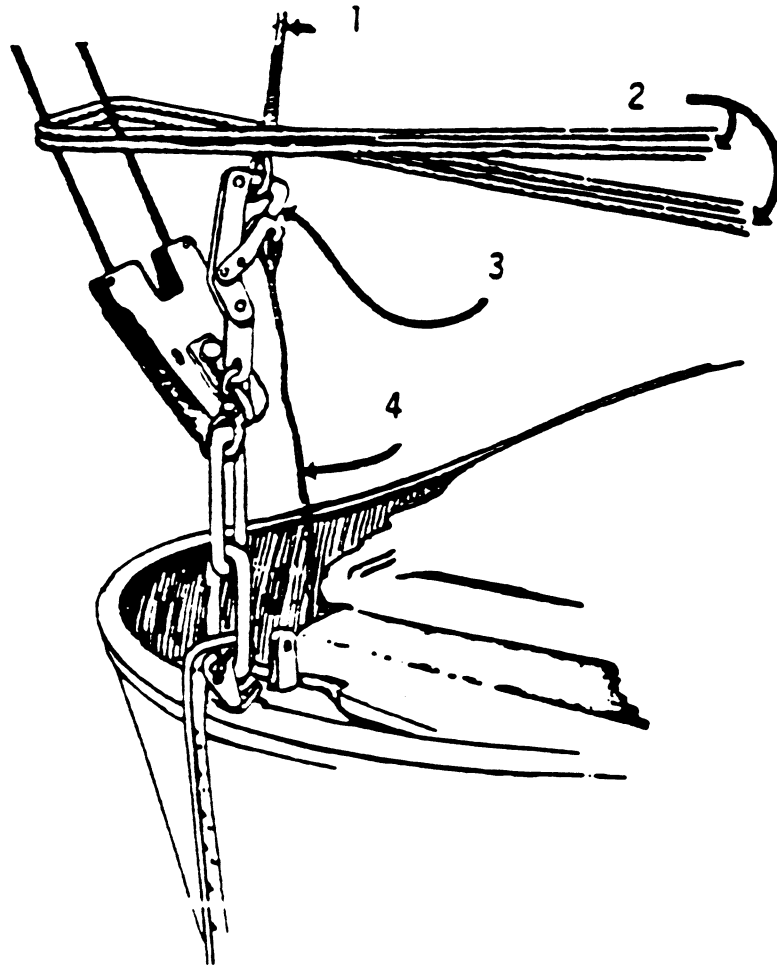
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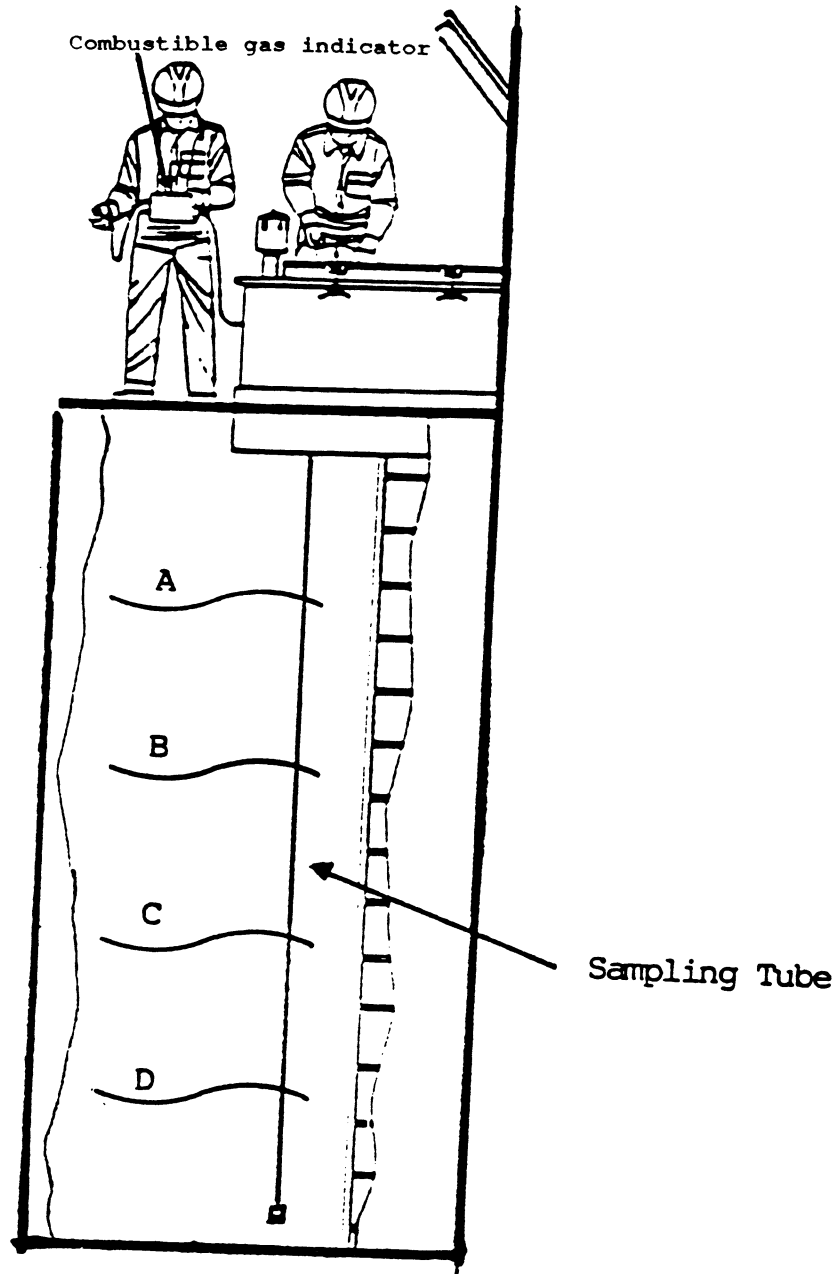
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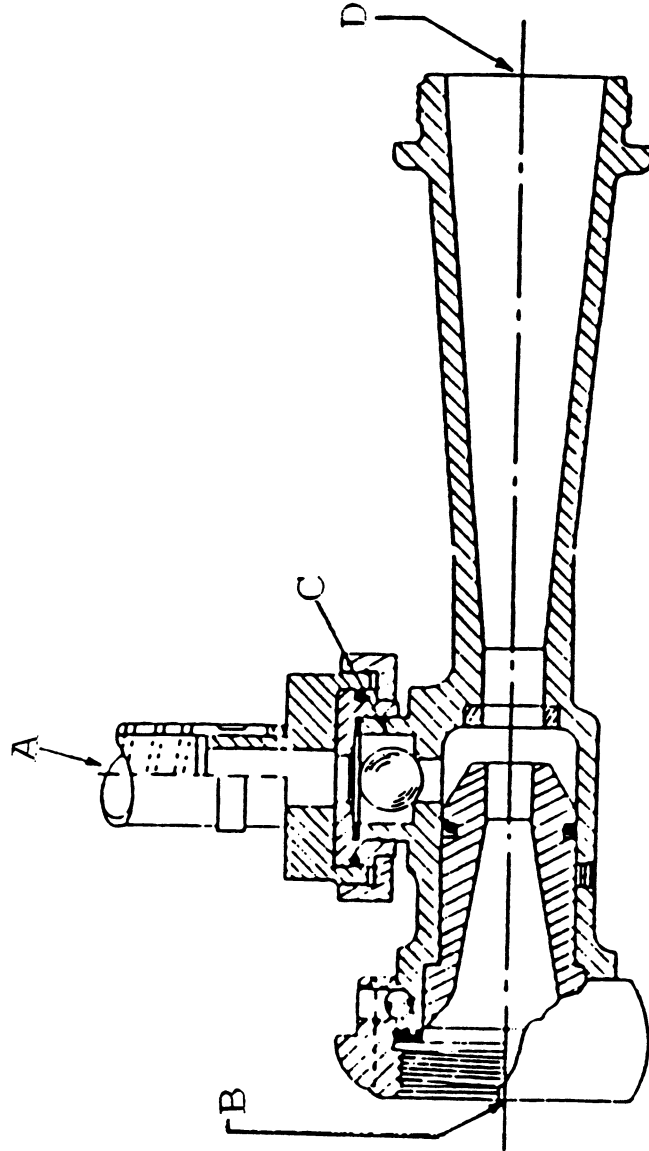
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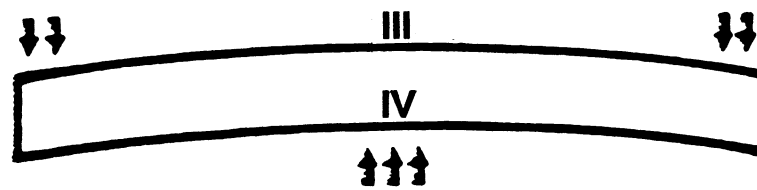
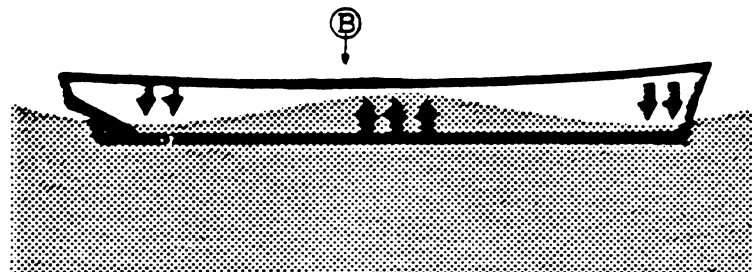
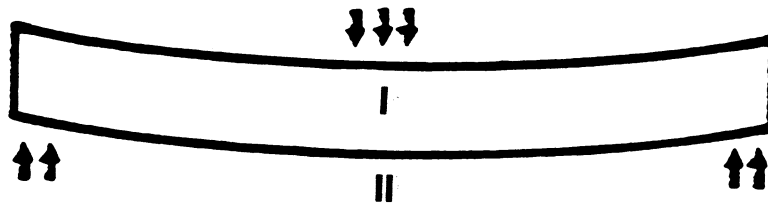
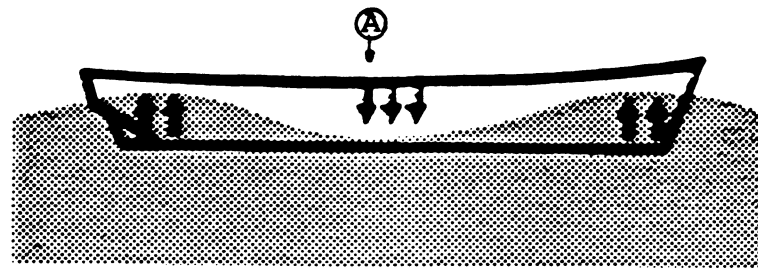
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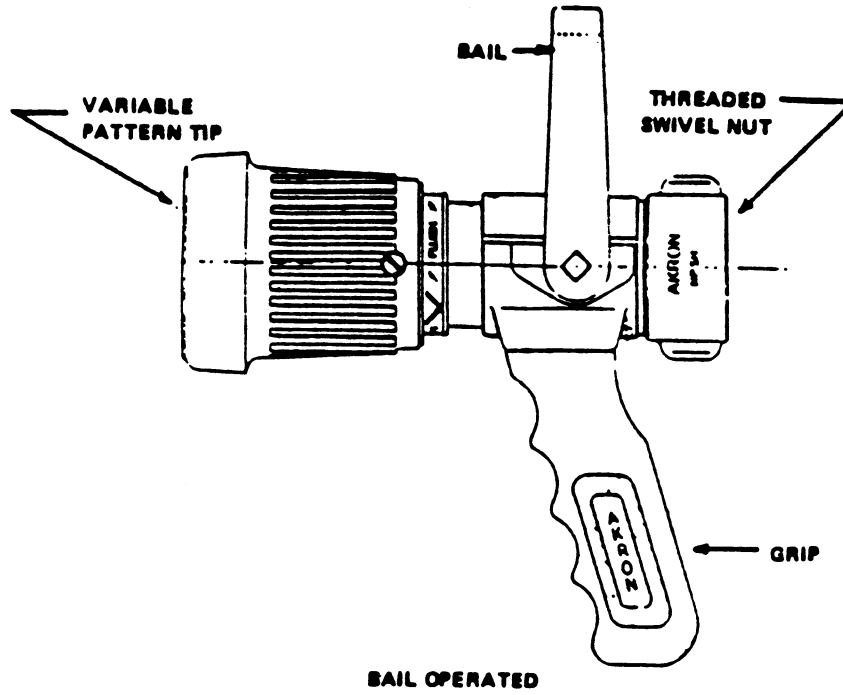
SF-0031



SF-0032



SF-0033



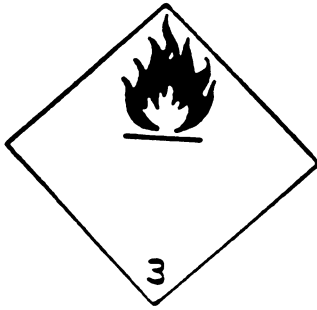
SF-0034

FLOW OF WATER THROUGH HOLES

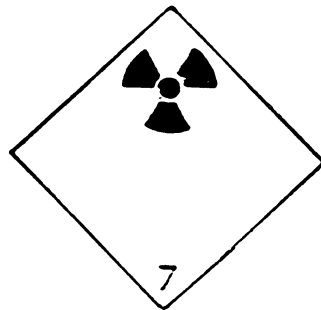
HOLE DIA. IN INCHES	HEAD OF WATER IN FEET												
	2	4	6	8	10	12	14	16	18	20	24	28	32
1	28	40	49	56	63	69	74	79	84	89	97	105	112
2	111	157	192	222	248	272	294	314	333	351	384	415	444
3	250	354	433	500	559	612	661	707	750	790	866	935	1000
4	445	629	770	889	994	1089	1176	1257	1333	1405	1540	1663	1778
5	695	982	1203	1389	1553	1701	1837	1964	2083	2196	2406	2598	2778
6	1000	1414	1732	2000	2236	2449	2646	2828	3000	3162	3464	3741	4000
7	1361	1925	2357	2722	3043	3333	3601	3849	4083	4303	4714	5092	5444
8	1777	2514	3078	3555	3974	4354	4702	5027	5332	5620	6157	6650	7109
9	2249	3181	3896	4499	5030	5510	5951	6362	6748	7113	7792	8416	8997
10	2777	3927	4809	5553	6209	6802	7347	7854	8330	8781	9619	10390	11107
11	3360	4752	5820	6720	7514	8231	8890	9504	10080	10626	11640	12573	13441
12	4000	5655	6926	7997	8941	9795	10579	11310	11996	12645	13852	14961	15995
13	4693	6637	8129	9386	10494	11496	12417	13274	14079	14841	16257	17560	18772
14	5443	7697	9426	10885	12170	13331	14400	15394	16327	17210	18853	20364	21770
15	6246	8834	10820	12494	13969	15302	16528	17667	18740	19754	21640	23374	24988
16	7106	10051	12310	14214	15892	17409	18804	20102	21322	22475	24620	26593	28429
17	8024	11347	13897	16047	17942	19654	21229	22694	24071	25373	27795	30022	32095
18	8996	12722	15582	17992	20116	22035	23802	25445	26988	28448	31164	33660	35985
19	10024	14177	17363	20049	22416	24555	26523	28354	30073	31700	34726	37408	40098
20	11110	15710	19241	22218	24840	27211	29392	31421	33326	35129	38483	41566	44436
21	12244	17316	21208	24488	27379	29992	32396	34632	36732	38719	42416	45814	48977
22	13439	19008	23280	26881	30054	32923	35561	38016	40322	42503	46560	50290	53763
23	14688	20772	25441	29376	32844	35978	38861	41544	44064	46447	50881	54958	58753
24	15995	22622	27707	31993	35769	39183	42323	45245	47989	50585	55414	59853	63986
25	17356	24545	30061	34711	38809	42513	45920	49090	52067	54883	60122	64939	69424
26	18770	26546	32513	37542	41974	45980	49664	53093	56313	59359	65025	70235	75085
27	20242	28627	35061	40485	45264	49584	53557	57254	60727	64012	70122	75740	80971
28	21770	30787	37707	43539	48679	53325	57598	61574	65309	68842	75413	81455	87080
29	23353	33026	40449	46706	52220	57203	61787	66053	70059	73849	80898	87380	93414
30	24992	35345	43289	49985	55885	61219	66125	70690	74977	79033	86577	93514	99971
31	26683	37735	46216	53365	59665	65359	70597	75470	80048	84378	92432	99838	106732
32	28434	40212	49250	56868	63581	69649	75231	80424	85302	89916	98499	106391	113738

SF-0035

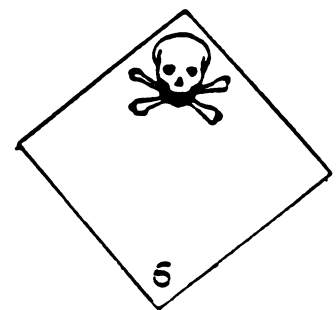
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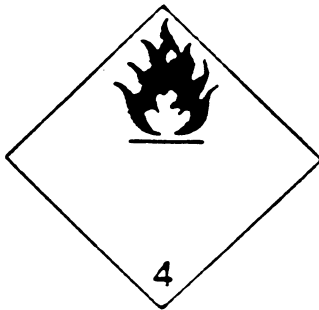
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C



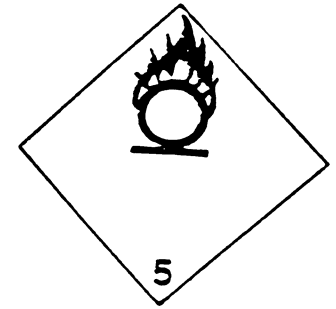
D



E



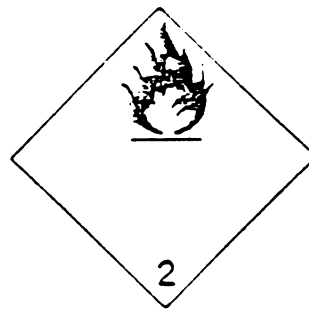
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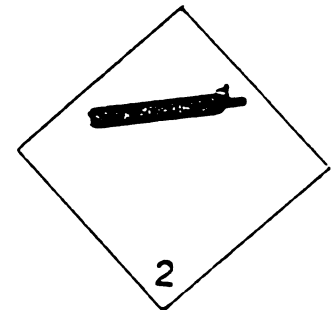
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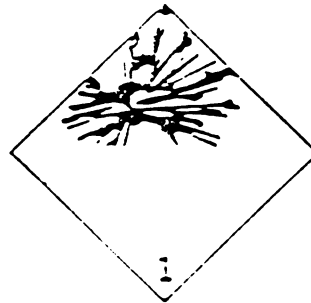
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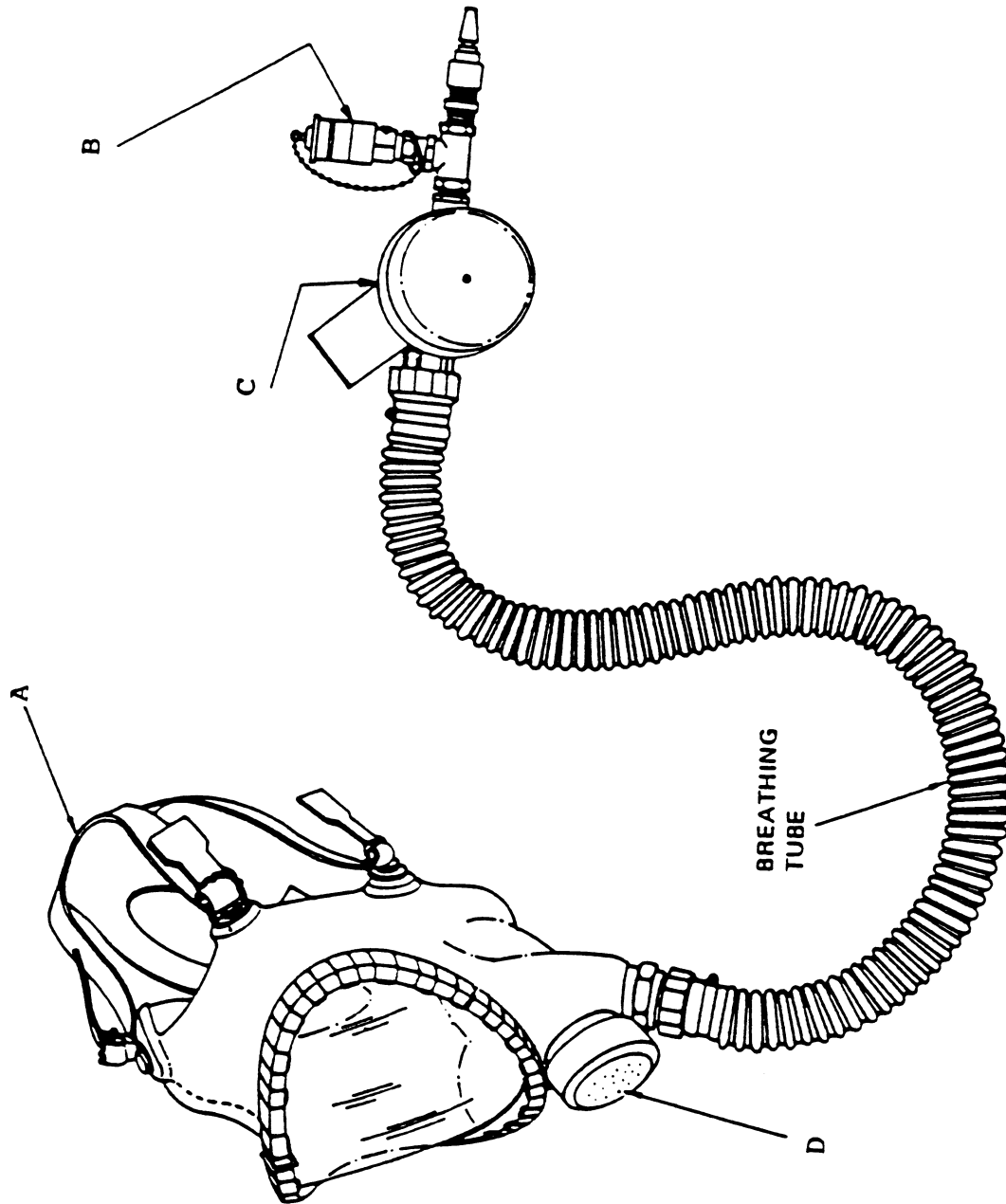
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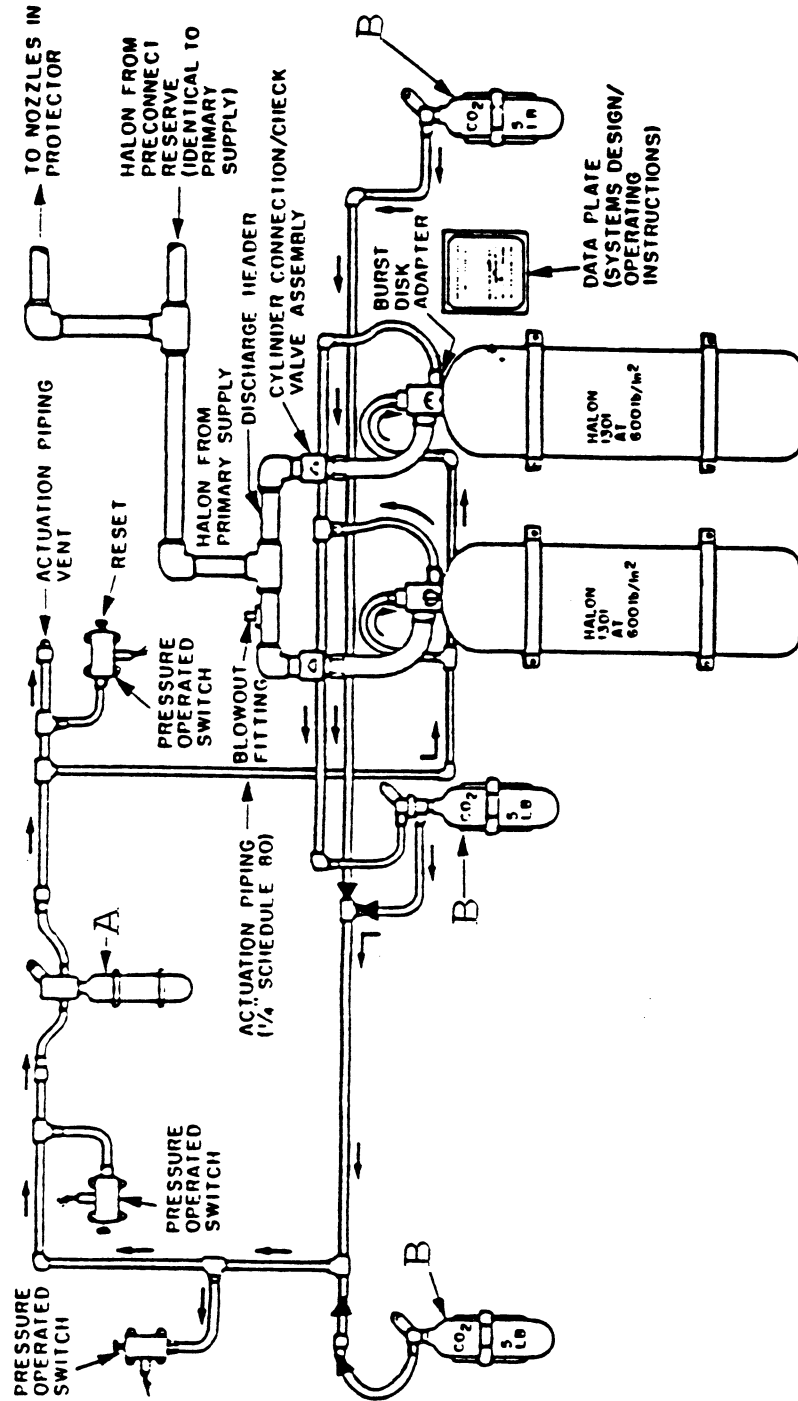
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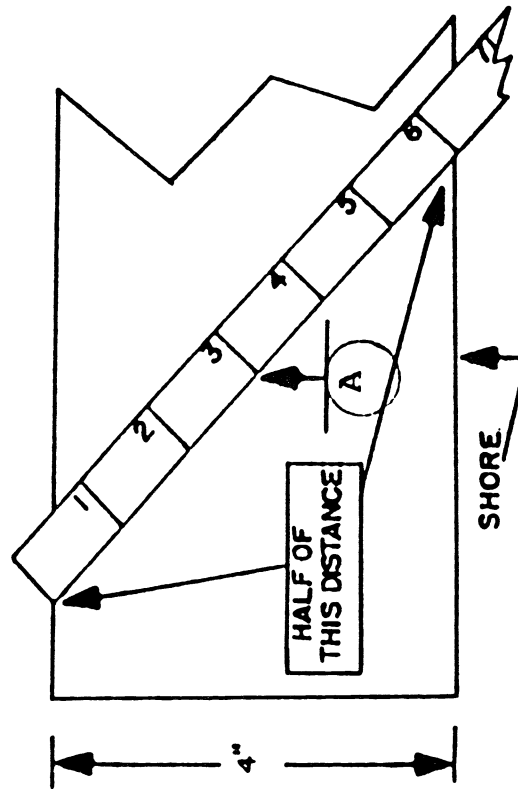
SF-0036



SF-0037



SF-0038



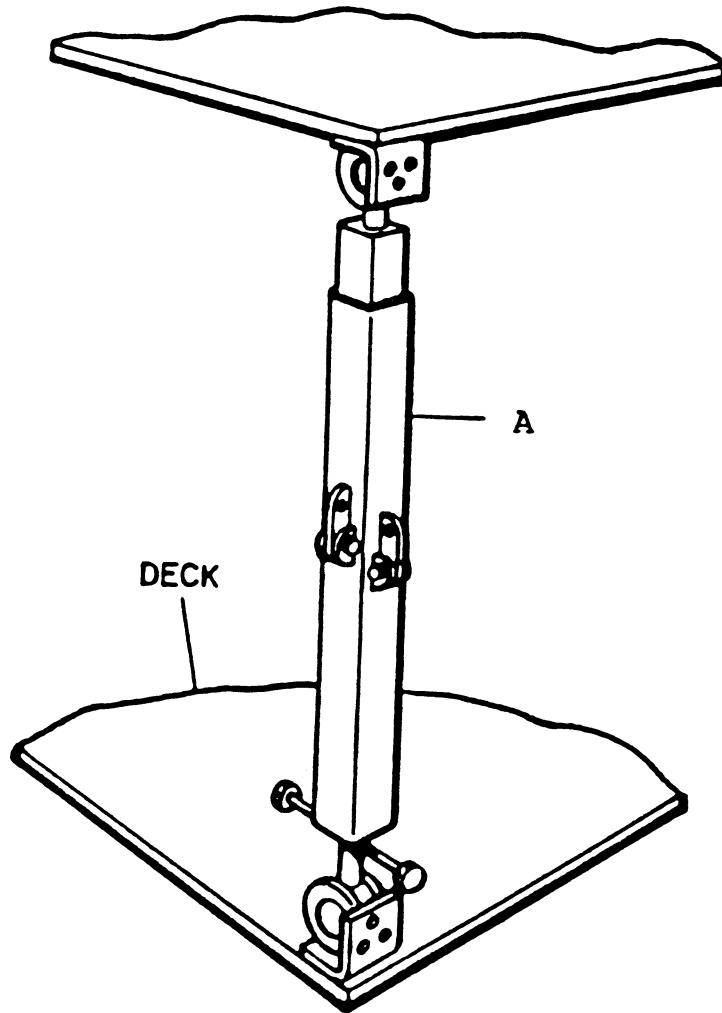
**MEASUREMENT ON
CARPENTER'S SQUARE**

- 5/16 inch
- 3/8 inch
- 7/16 inch
- 1/2 inch
- 9/16 inch
- 5/8 inch
- 11/16 inch
- 3/4 inch
- 13/16 inch
- 7/8 inch
- 15/16 inch
- 1 inch

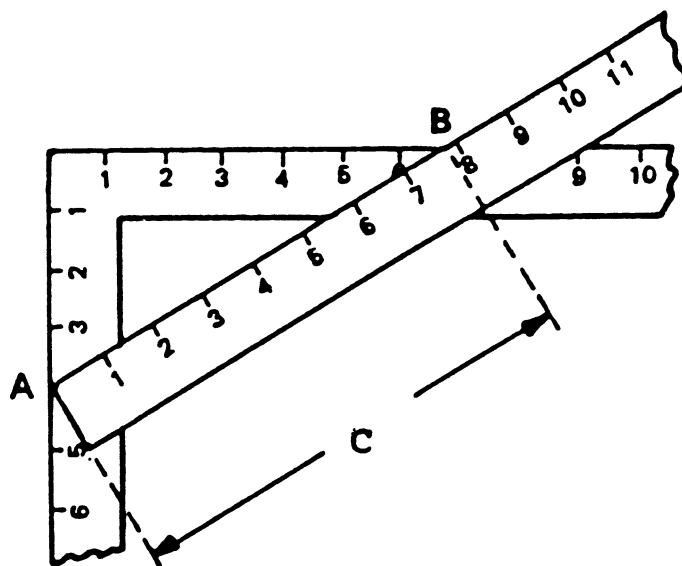
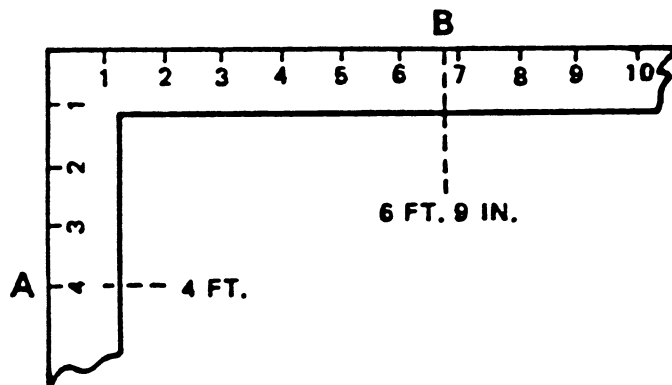
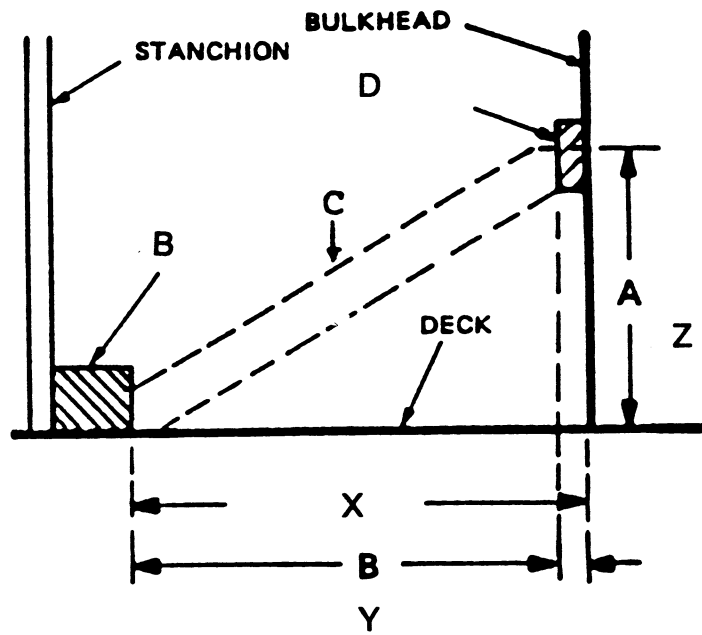
**ACTUAL RULE
MEASUREMENT**

- 3-3/4 inches
- 4-1/2 inches
- 5-1/2 inches
- 6 inches
- 6-3/4 inches
- 7-1/2 inches
- 8-1/4 inches
- 9 inches
- 9-3/4 inches
- 10-1/2 inches
- 11-1/2 inches
- 12 inches

SF-0039



SF-0040



SF-0041-A

Page 1 of a two page illustration

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072



IDENTITY (As Used on Label and List) Gasoline	<i>Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.</i>
---	--

Section I

Manufacturer's Name Some Oil Company	Emergency Telephone Number 914-555-3400 X214
Address (Number, Street, City, State, and ZIP Code) 100 Industrial Drive Some City, TX 99999	Telephone Number for Information 914-555-3400 X570
	Date Prepared November 20, 1987
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Blend of Carbon 6 - Carbon 10		900 mg/m3		
Alipatic/parafinic hydrocarbons				
BENZENE	1 ppm	10 ppm	0.8-2.0	
Organic Lead Compounds			varies	
Toluene	200 ppm	100 ppm		
Xylene	100 ppm	100 ppm		
Unleaded premium gasoline		300 ppm/500 ppm	Short term exposure limit	

Section III — Physical/Chemical Characteristics

Boiling Point	90-410°F	Specific Gravity (H ₂ O = 1)	0.72-0.76
Vapor Pressure (mm Hg.)	400	Melting Point	N/A
Vapor Density (AIR = 1)	3-4	Evaporation Rate (Butyl Acetate = 1)	1

Solubility in Water

Insoluble

Appearance and Odor

Pink liquid, aromatic odor

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 40°F (tag closed)	Flammable Limits	LEL 1.4	UEL 7.6
---	-------------------------	-------------------	-------------------

Extinguishing Media Dry chemical, Carbon Dioxide, Foam, water fog (product will float and can be reignited on surface of water).

Special Fire Fighting Procedures Cool storage drums with water mist. Evacuate area. Prevent run-off from entering water supply. Do not enter confined space without appropriate protective equipment.

Unusual Fire and Explosion Hazards Water may be ineffective on gasoline fires. Extremely flammable. Vapor accumulation could flash and/or explode.

SF-0041-B

Gasoline

Page 2 of a two page illustration

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid Prevent vapor accumulation.
	Stable	X	Heat, open flame, sparks and strong oxidizing agents.
Incompatibility (<i>Materials to Avoid</i>) Oxidizers, acids, bases			
Hazardous Decomposition or Byproducts Carbon Dioxide, Carbon Monoxide and other unidentified organic compounds.			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation? YES	Skin? YES	Ingestion? YES
Health Hazards (<i>Acute and Chronic</i>) ACUTE: Irritation of eyes, nose and throat. May cause "drunkenness" if exposure is massive. Harmful or fatal, if swallowed. CHRONIC: Vomiting, diarrhea, insomnia, headache, dizziness, anemia, muscle and nerve damage. Aplastic anemia and leukemia may be caused by Benzene content. Gasoline contains more than 0.1% Benzene must be labeled warning of the Benzene toxicity. Prolonged or repeated skin contact causes dermatitis.			
Carcinogenicity:	NTP? YES (Benzene 0.1%)	IARC Monographs? YES (Benzene 0.1%)	OSHA Regulated? YES (Benzene 0.1%)

Signs and Symptoms of Exposure

Irritation of eyes, nose, throat, nausea, vomiting, diarrhea, insomnia, headache, giddiness, dizziness.

Medical Conditions

Generally Aggravated by Exposure Nerve disease; eye, skin and respiratory disorders; impaired liver or kidney function.

Emergency and First Aid Procedures

Remove overcome victim from the exposure. Begin artificial respiration, get medical attention. If skin and eyes are involved, flush with water immediately and for at least 15 minutes. Ingestion - do not induce vomiting.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Dike spill, soak up small spills with absorbent material. Eliminate all ignition sources. Remove leaking containers to detached area. Runoff may create fire or explosion hazard in sewer system. For major spills, get up-wind and notify local emergency personnel.

Waste Disposal Method

May be incinerated. Product recovery or recycling recommended. Absorbent should be disposed of and as an ignitable hazardous waste.

Precautions to Be Taken in Handling and Storing

Store away from heat, sparks and open flames. Keep away from oxidizers, acids, bases. Drums must be grounded and bonded and equipped with self closing valves.

Other Precautions

Gasoline may contain organic lead compounds. These will significantly increase the toxicity of gasoline. Lead poisoning has been the cause of death when gasoline was ingested. Do not siphon by mouth.

Section VIII — Control Measures

Respiratory Protection (Specify Type)

Organic vapor.

Ventilation	Local Exhaust	General ventilation. Use explosion proof ventilation to prevent vapor accumulation.	Special N/A
	Mechanical (General)	YES, explosion-proof.	Other N/A

Protective Gloves

Impervious

Eye Protection

Splash proof chemical safety goggles.

Other Protective Clothing or Equipment

Use in well ventilated area away from ignition sources. Wash with soap and water after handling.

Work/Hygienic Practices

SF-0042

