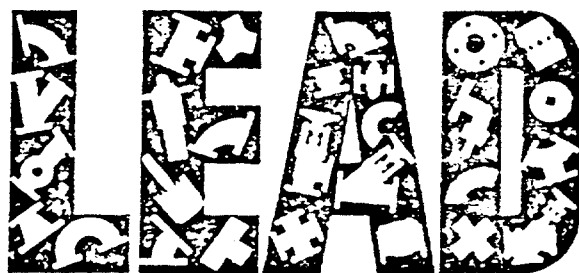


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notice, it is due to the
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142

NATIONAL



PRODUCTS

FOR THE

CHEMICAL INDUSTRY



rely on LEAD to resist corrosion

-1-71-52

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NLI 115271

142

NATIONAL LEAD COMPANY PRODUCTS

For Handling Corrosive Materials in
CHEMICAL PROCESSING

Lead Sheet

Lead, Lead Lined and Lead Covered Pipe and Coils

Hard Lead and Lead Lined Valves and Fittings

Hard Lead Pumps

Homogeneous Lead Lined Tanks and Vessels

Extruded, Cast, and Machined Lead Products

Acid Recovery Equipment



NATIONAL LEAD COMPANY

General Office: 111 BROADWAY, NEW YORK 6, N. Y.

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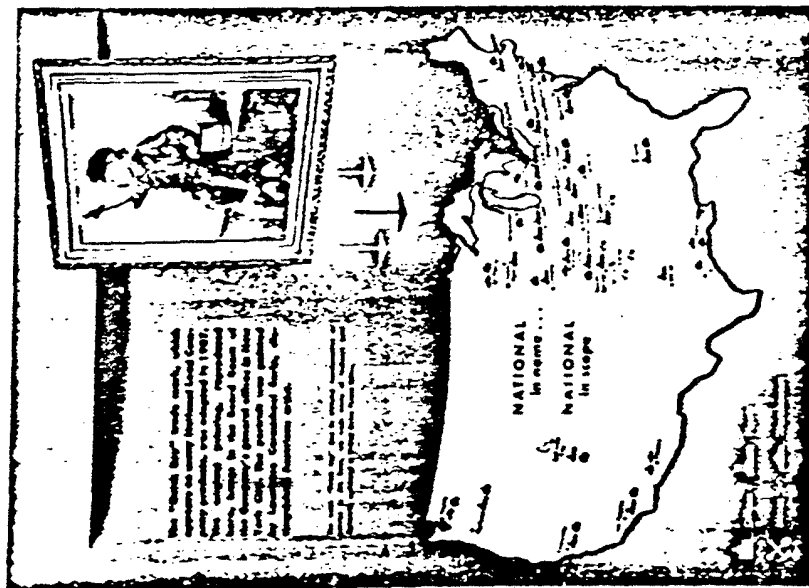
NLI 115272

1-71-52

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NLI 115274



LOOK TO THE LEADER FOR LEAD

The formula for leadership in any industry comes down to about this: Deliver the right goods at the right price, at the right place at the right time. The percent of this policy has earned for National Lead Company leadership in the field of lead products.

As may be seen by a glance at the map on the facing page, the Company maintains a network of plants across the nation, making it possible to meet the demand of time and place. These plants are geared to produce high grade lead goods in the volumes necessary to keep costs down. This makes it possible to meet the demand for top quality at a fair price.

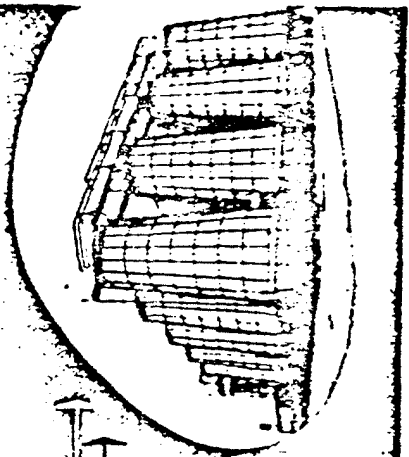
Because of these established facilities and policies National Lead Company is backed upon as lead in authority by the chemical processing industry, from the base of a single lead sheet to the purchase of a complete metal handling system.

NATIONAL LEAD COMPANY

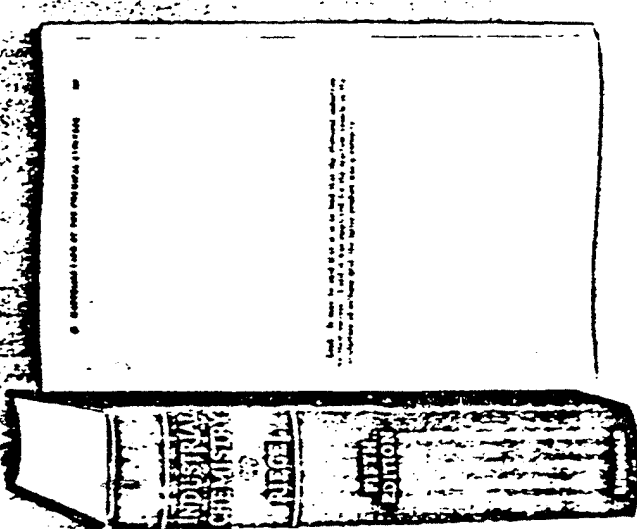
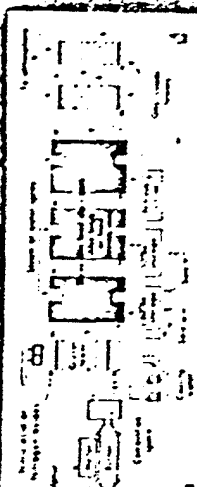
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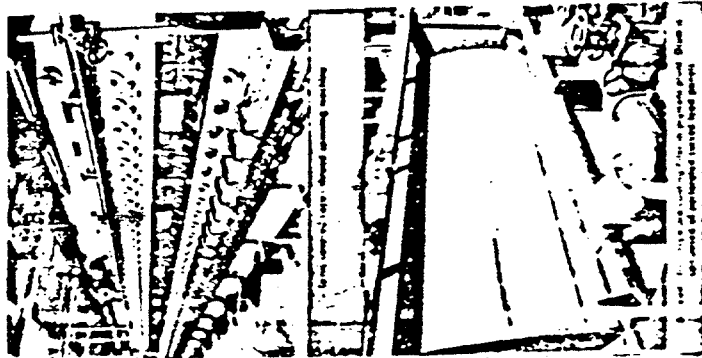
NLI 115275



The following is a list of the buildings shown in the drawing above. The buildings are numbered 1 through 10. The buildings are shown in a perspective view. The buildings are shown in a perspective view. The buildings are shown in a perspective view.



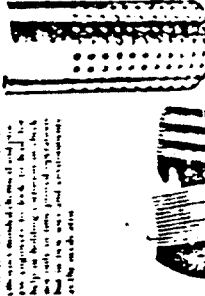
LEAD KEEPS PACE WITH Chemical Progress



The original point in the chemical industry was lead in the form of lead. The lead industry has been a leader in the chemical industry for many years. Lead is a versatile material that can be used in a variety of ways. It is a good conductor of electricity and is used in the manufacture of batteries. It is also used in the manufacture of pipes and other industrial equipment.

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Lead pipe used for carrying acid. The pipe is made of lead and is lined with a protective material to prevent corrosion.

Choosing a Corrosion Resistant Material of Construction

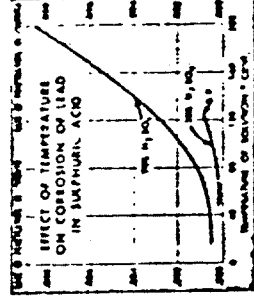
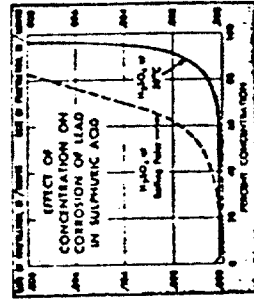
The first step in choosing a corrosion resistant material of construction is to determine the type of corrosion that will be encountered. This can be done by consulting with a corrosion expert or by conducting tests on the material.

Once the type of corrosion has been determined, the next step is to choose a material that is resistant to that type of corrosion. This can be done by consulting with a corrosion expert or by conducting tests on the material.

1-CORROSION RESISTANCE

The first step in choosing a corrosion resistant material of construction is to determine the type of corrosion that will be encountered. This can be done by consulting with a corrosion expert or by conducting tests on the material.

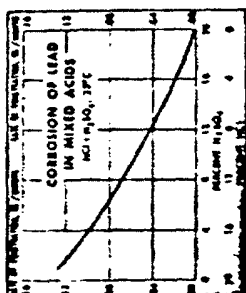
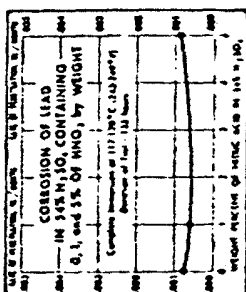
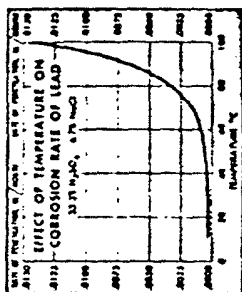
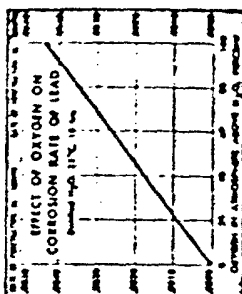
Once the type of corrosion has been determined, the next step is to choose a material that is resistant to that type of corrosion. This can be done by consulting with a corrosion expert or by conducting tests on the material.



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NLI 115277

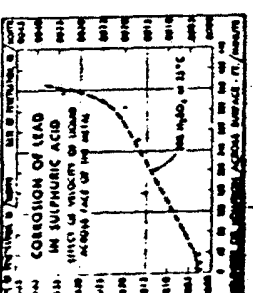
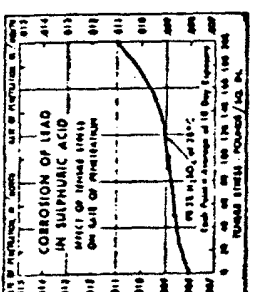
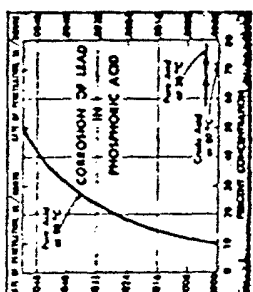
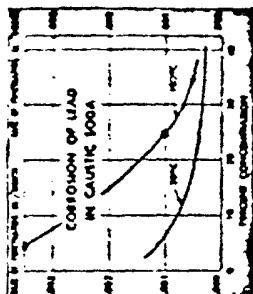


The rate of corrosion of lead in 1N H₂SO₄ is significantly affected by the presence of oxygen. As the concentration of oxygen in the solution increases, the rate of corrosion increases sharply. This is due to the fact that oxygen acts as a cathodic depolarizer, accelerating the anodic dissolution of lead.

The rate of corrosion of lead in 1N H₂SO₄ is also affected by temperature. As the temperature increases, the rate of corrosion decreases. This is because the activation energy for the corrosion process is relatively high, and the rate of reaction decreases as the temperature increases.

The rate of corrosion of lead in H₂SO₄ is also affected by the concentration of the acid. As the concentration of H₂SO₄ increases, the rate of corrosion decreases. This is because the concentration of H⁺ ions decreases as the concentration of H₂SO₄ increases, and the rate of corrosion is dependent on the concentration of H⁺ ions.

The rate of corrosion of lead in H₂SO₄ is also affected by the pH of the solution. As the pH increases, the rate of corrosion decreases. This is because the concentration of H⁺ ions decreases as the pH increases, and the rate of corrosion is dependent on the concentration of H⁺ ions.



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NLI 115278

2. PHYSICAL AND MECHANICAL PROPERTIES

These properties are determined by the nature of the material and the conditions of its use. The properties of the material are determined by its chemical composition, its physical structure, and its mechanical properties. The conditions of its use are determined by the environment, the load, and the time of use.

PHYSICAL PROPERTIES

Property	Value
Density	1.25 g/cm ³
Specific Gravity	1.25
Thermal Expansion Coefficient	1.5 x 10 ⁻⁵ /°C
Thermal Conductivity	0.15 W/m·K
Electrical Resistivity	1.5 x 10 ¹⁰ Ω·cm
Magnetic Permeability	1.0
Optical Transparency	Translucent
Acoustic Impedance	1.5 x 10 ⁶ kg/m ² ·s

MECHANICAL PROPERTIES

Property	Value
Tensile Strength	100 MPa
Yield Strength	50 MPa
Elongation at Break	10%
Impact Strength	50 J/m ²
Hardness	100 HB

3. AVAILABILITY

The material is available in the form of a solid, a liquid, or a gas. It is available in the form of a solid, a liquid, or a gas. It is available in the form of a solid, a liquid, or a gas.



4. COST

The cost of the material is determined by its quality, its quantity, and its location. The cost of the material is determined by its quality, its quantity, and its location. The cost of the material is determined by its quality, its quantity, and its location.

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NLI 115279

Chemicals with WHICH LEAD MAY BE USED

Lead may be used with any of the chemicals listed in this section. The following list of chemicals is given for information only. The use of lead with any of these chemicals is not recommended. Because of the lead content of the chemicals, the use of lead with any of these chemicals is not recommended.

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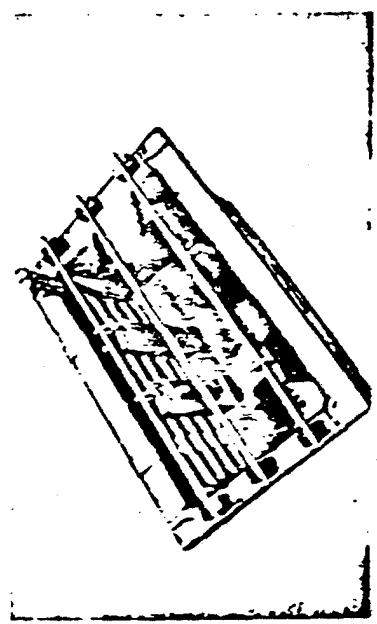
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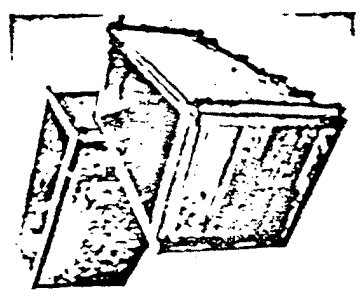
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NLJ 115280

Grades of Lead

[illegible][illegible]

TYPICAL CHEMICAL ANALYSES OF CHEMICAL LEAD OF THE GRADE USED BY NATIONAL LEAD CO.	
Lead	99.980 per cent
Copper	0.004 per cent
Antimony	0.002 per cent
Bismuth	0.0005 per cent
Iron	0.0005 per cent
Asphalt, calcium and its compounds	0.0005 per cent
Carbon	0.0005 per cent
Calcium and related compounds	0.0004 per cent
Lead by difference	99.976 per cent



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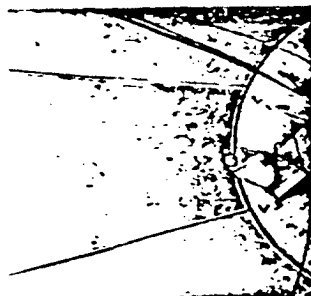
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NIJ 115281

SHEET LEAD SIZES AND WEIGHTS

1. The first step is to identify the problem or question that needs to be addressed. This involves understanding the context and the specific requirements of the task.

PANEL	MATERIAL	THICKNESS	TEST RESULTS		REMARKS
			STRENGTH	MODULUS	
1	STEEL	0.005	1000	1.00	1.00
2	STEEL	0.005	1000	1.00	1.00
3	STEEL	0.005	1000	1.00	1.00
4	STEEL	0.005	1000	1.00	1.00
5	STEEL	0.005	1000	1.00	1.00
6	STEEL	0.005	1000	1.00	1.00
7	STEEL	0.005	1000	1.00	1.00
8	STEEL	0.005	1000	1.00	1.00
9	STEEL	0.005	1000	1.00	1.00
10	STEEL	0.005	1000	1.00	1.00
11	STEEL	0.005	1000	1.00	1.00
12	STEEL	0.005	1000	1.00	1.00
13	STEEL	0.005	1000	1.00	1.00
14	STEEL	0.005	1000	1.00	1.00
15	STEEL	0.005	1000	1.00	1.00
16	STEEL	0.005	1000	1.00	1.00
17	STEEL	0.005	1000	1.00	1.00
18	STEEL	0.005	1000	1.00	1.00
19	STEEL	0.005	1000	1.00	1.00
20	STEEL	0.005	1000	1.00	1.00

[illegible]

Lead time: 4-6 weeks

One more general purpose has to do with the nature of the thinking that is involved in doing the thinking. The thinking is not merely a kind of rote learning or a kind of rote repetition. It is a kind of creative thinking. It is a kind of thinking that is not only about the world, but also about the self. It is a kind of thinking that is not only about the world, but also about the self. It is a kind of thinking that is not only about the world, but also about the self.

2018

as the "Lovers" taken upon entering "the city of the
Bible" and "the city of the Bible" and "the city of the Bible"
and "the city of the Bible" and "the city of the Bible" and "the city of the Bible"

Lead Sheet

[illegible]

The most recent, somewhat dated, findings by Bogue, et al., suggest a major portion of the nation's death load is borne by the aged. The proportion of the population aged 65 and over has increased from 10.5 per cent in 1940 to 13.5 per cent in 1950. The death rate for this age group has increased from 10.5 per cent in 1940 to 13.5 per cent in 1950. The death rate for the aged is 1.5 times that of the total population.

After the sheet had reached the top of the tunnel, it was removed from the rollers, laid where it was required to be, and returned to the rollers. The sheet was then spread on a workbench, made into all hand-rolls for shipping and was then returned to the rollers for sheeting. In this manner, the sheet was made in 100 ft. lengths, and the process of rolling the sheet was completed.



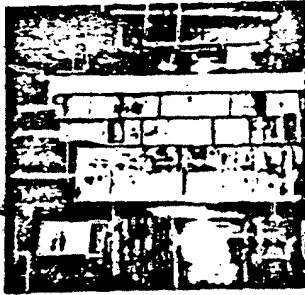
THE 1968-1969 season was a very dry one for the region. The total rainfall was only 1.4 inches, which is less than half of the normal amount. This was due to a combination of factors, including a late start to the rainy season and a period of drought in the spring and summer months.

APPLICATION OF SHEET LEAD LININGS

[illegible]

300SE: LEAD LININGS

The most widely used method of determining the amount of water in a sample is gravimetric analysis. This method involves weighing a known amount of sample and then drying it in a desiccator or oven to remove the water. The weight of the sample is then compared to the weight of the water removed to determine the water content. This method is simple and accurate, but it can be time-consuming and requires a large amount of sample.



WILSON, J. D. 1973. THE EFFECTS OF FLOODING ON THE GROWTH OF WILLOW (SALIX) AND BIRCH (BETULA) IN A TROPICAL RAIN FOREST.

...the ... of ...

BONDED OR HOMOGENEOUS LININGS

The following table shows the results of the analysis of variance for the effect of the type of soil on the yield of the different varieties of wheat. The data are given in bushels per acre.

TYPICAL INSTALLATIONS OF HOMOGENEOUS EQUIPMENT

[illegible]

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Lead Pipe

The standard system of an old building (from inside) showing the lead pipe system. The pipe is shown in the center of the frame, with the lead pipe system in the background. The pipe is shown in the center of the frame, with the lead pipe system in the background.

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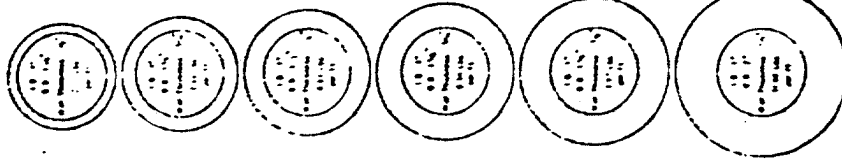
The lead pipe system of an old building (from inside) showing the lead pipe system. The pipe is shown in the center of the frame, with the lead pipe system in the background. The pipe is shown in the center of the frame, with the lead pipe system in the background.



CHEMICAL LEAD PIPE NOMINAL SIZES AND WEIGHTS

Other sizes and weights can be furnished upon request.

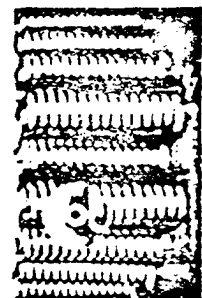
Nominal Size, in.	Weight, lb. per ft.	Nominal Size, in.	Weight, lb. per ft.	Nominal Size, in.	Weight, lb. per ft.
1/2	1.10	1 1/2	10.0	3 1/2	35.0
3/4	1.50	2	14.0	4	45.0
1	2.00	2 1/2	19.0	5	60.0
1 1/4	2.50	3	24.0	6	75.0
1 1/2	3.00	3 1/2	29.0	8	100.0
2	4.00	4	38.0	10	130.0
2 1/2	5.00	5	47.0	12	160.0
3	6.00	6	56.0	14	190.0
3 1/2	7.00	8	75.0	16	220.0
4	8.00	10	94.0	18	250.0
4 1/2	9.00	12	113.0	20	280.0
5	10.00	14	132.0	24	340.0
5 1/2	11.00	16	151.0	30	410.0
6	12.00	18	170.0	36	480.0
6 1/2	13.00	20	189.0	42	550.0
7	14.00	24	228.0	48	620.0
7 1/2	15.00	30	267.0	54	690.0
8	16.00	36	306.0	60	760.0
8 1/2	17.00	42	345.0	66	830.0
9	18.00	48	384.0	72	900.0
9 1/2	19.00	54	423.0	78	970.0
10	20.00	60	462.0	84	1040.0
10 1/2	21.00	66	501.0	90	1110.0
11	22.00	72	540.0	96	1180.0
11 1/2	23.00	78	579.0	102	1250.0
12	24.00	84	618.0	108	1320.0
12 1/2	25.00	90	657.0	114	1390.0
13	26.00	96	696.0	120	1460.0
13 1/2	27.00	102	735.0	126	1530.0
14	28.00	108	774.0	132	1600.0
14 1/2	29.00	114	813.0	138	1670.0
15	30.00	120	852.0	144	1740.0
15 1/2	31.00	126	891.0	150	1810.0
16	32.00	132	930.0	156	1880.0
16 1/2	33.00	138	969.0	162	1950.0
17	34.00	144	1008.0	168	2020.0
17 1/2	35.00	150	1047.0	174	2090.0
18	36.00	156	1086.0	180	2160.0
18 1/2	37.00	162	1125.0	186	2230.0
19	38.00	168	1164.0	192	2300.0
19 1/2	39.00	174	1203.0	198	2370.0
20	40.00	180	1242.0	204	2440.0
20 1/2	41.00	186	1281.0	210	2510.0
21	42.00	192	1320.0	216	2580.0
21 1/2	43.00	198	1359.0	222	2650.0
22	44.00	204	1398.0	228	2720.0
22 1/2	45.00	210	1437.0	234	2790.0
23	46.00	216	1476.0	240	2860.0
23 1/2	47.00	222	1515.0	246	2930.0
24	48.00	228	1554.0	252	3000.0
24 1/2	49.00	234	1593.0	258	3070.0
25	50.00	240	1632.0	264	3140.0
25 1/2	51.00	246	1671.0	270	3210.0
26	52.00	252	1710.0	276	3280.0
26 1/2	53.00	258	1749.0	282	3350.0
27	54.00	264	1788.0	288	3420.0
27 1/2	55.00	270	1827.0	294	3490.0
28	56.00	276	1866.0	300	3560.0
28 1/2	57.00	282	1905.0	306	3630.0
29	58.00	288	1944.0	312	3700.0
29 1/2	59.00	294	1983.0	318	3770.0
30	60.00	300	2022.0	324	3840.0
30 1/2	61.00	306	2061.0	330	3910.0
31	62.00	312	2100.0	336	3980.0
31 1/2	63.00	318	2139.0	342	4050.0
32	64.00	324	2178.0	348	4120.0
32 1/2	65.00	330	2217.0	354	4190.0
33	66.00	336	2256.0	360	4260.0
33 1/2	67.00	342	2295.0	366	4330.0
34	68.00	348	2334.0	372	4400.0
34 1/2	69.00	354	2373.0	378	4470.0
35	70.00	360	2412.0	384	4540.0
35 1/2	71.00	366	2451.0	390	4610.0
36	72.00	372	2490.0	396	4680.0
36 1/2	73.00	378	2529.0	402	4750.0
37	74.00	384	2568.0	408	4820.0
37 1/2	75.00	390	2607.0	414	4890.0
38	76.00	396	2646.0	420	4960.0
38 1/2	77.00	402	2685.0	426	5030.0
39	78.00	408	2724.0	432	5100.0
39 1/2	79.00	414	2763.0	438	5170.0
40	80.00	420	2802.0	444	5240.0
40 1/2	81.00	426	2841.0	450	5310.0
41	82.00	432	2880.0	456	5380.0
41 1/2	83.00	438	2919.0	462	5450.0
42	84.00	444	2958.0	468	5520.0
42 1/2	85.00	450	2997.0	474	5590.0
43	86.00	456	3036.0	480	5660.0
43 1/2	87.00	462	3075.0	486	5730.0
44	88.00	468	3114.0	492	5800.0
44 1/2	89.00	474	3153.0	498	5870.0
45	90.00	480	3192.0	504	5940.0
45 1/2	91.00	486	3231.0	510	6010.0
46	92.00	492	3270.0	516	6080.0
46 1/2	93.00	498	3309.0	522	6150.0
47	94.00	504	3348.0	528	6220.0
47 1/2	95.00	510	3387.0	534	6290.0
48	96.00	516	3426.0	540	6360.0
48 1/2	97.00	522	3465.0	546	6430.0
49	98.00	528	3504.0	552	6500.0
49 1/2	99.00	534	3543.0	558	6570.0
50	100.00	540	3582.0	564	6640.0



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NLI 115284

Lead Pipe Coils



Having a coil of lead pipe is a valuable asset in any emergency. The coil is made of lead pipe, which is a material that is resistant to fire and is also resistant to corrosion. The coil is made of lead pipe, which is a material that is resistant to fire and is also resistant to corrosion. The coil is made of lead pipe, which is a material that is resistant to fire and is also resistant to corrosion.

TRAPS AND BENDS

We manufacture a full line of lead traps and bends in all standard patterns. These are produced in all standard patterns. These are produced in all standard patterns. These are produced in all standard patterns.

PACKING

Lead pipe is packed in wooden crates. The crates are made of wood and are designed to protect the pipe from damage. The crates are made of wood and are designed to protect the pipe from damage. The crates are made of wood and are designed to protect the pipe from damage.

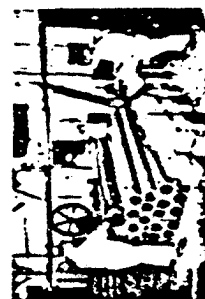
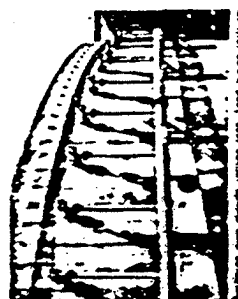


Lead pipe is packed in wooden crates. The crates are made of wood and are designed to protect the pipe from damage. The crates are made of wood and are designed to protect the pipe from damage. The crates are made of wood and are designed to protect the pipe from damage.

ECONOMIC COMPARISON OF PIPING FOR HANDLING 60" x 10" x 100'			
Material	Weight (lb.)	Volume (cu. ft.)	Cost (\$)
Lead	1000	100	100
Steel	1000	100	100
Cast Iron	1000	100	100
Brass	1000	100	100
Copper	1000	100	100
Aluminum	1000	100	100
Concrete	1000	100	100
Plastic	1000	100	100
Asbestos	1000	100	100
Glass	1000	100	100
Wood	1000	100	100
Other	1000	100	100

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SPECIFIC GRAVITY DEGREES BAUME TABLE FOR THREE COMMON ACID SOLUTIONS

PHOSPHORIC ACID			ZINC CHLORIDE			SULPHURIC ACID		
%H ₃ PO ₄	Specific Gravity	°Baumé	%ZnCl ₂	Specific Gravity	°Baumé	%H ₂ SO ₄	Specific Gravity	°Baumé
1	1.0038	0.6	2	1.0167	2.4	1	1.0051	0.7
10	1.0532	7.3	10	1.0819	11.0	10	1.0661	9.0
20	1.1134	14.8	20	1.1866	22.8	20	1.1394	17.7
30	1.1805	22.2	30	1.2928	32.8	30	1.2185	26.0
40	1.254	29.4	40	1.4173	42.7	40	1.3028	33.7
50	1.335	36.4	50	1.5681	52.5	50	1.3951	41.1
60	1.426	43.3	60	1.749	62.1	60	1.4983	48.2
70	1.526	50.0	70	1.962	71.1	70	1.6105	55.0
80	1.633	56.2				80	1.7272	61.1
90	1.746	62.0				90	1.8144	65.1
100	1.870	67.5				97	1.8364	66.0
						100	1.8305	65.8

Approximate Boiling Points of H₂SO₄ at Atmospheric Pressure

50 °Bé—295 F	63 °Bé—432 F
60 °Bé—386 F	64 °Bé—451 F
61 °Bé—400 F	65 °Bé—485 F
62 °Bé—415 F	66 °Bé—538 F

COMPARISON OF BAUME SCALE AND SPECIFIC GRAVITY LIQUIDS HEAVIER THAN WATER¹

Degrees Baumé	Specific Gravity	Pounds Per Gallon
0	1.000	8.328
5	1.036	8.625
10	1.074	8.945
15	1.115	9.289
20	1.160	9.660
25	1.208	10.063
30	1.261	10.501
35	1.318	10.978
40	1.381	11.501
45	1.450	12.076
50	1.526	12.711
55	1.611	13.417
60	1.706	14.207
65	1.813	15.094
66	1.835	15.285

¹Degrees Baumé = $145 - \frac{145}{\text{sp. gr.}}$

TEMPERATURE CONVERSION

To convert from	To	Substitute in Formula
Degrees Centigrade	Degrees Fahrenheit	(°C. × 9/5) + 32
Degrees Centigrade	Degrees Absolute	(°C. + 273.18)
Degrees Centigrade	Degrees Reaumur	(°C. × 4/5)
Degrees Fahrenheit	Degrees Centigrade	(°F. - 32) × 5/9
Degrees Fahrenheit	Degrees Reaumur	(°F. - 32) × 4/9
Degrees Reaumur	Degrees Centigrade	(°Reaumur × 5/4)
Degrees Reaumur	Degrees Fahrenheit	(°Reaumur × 9/4) + 32

ENGINEERING DATA

LEAD PIPE FOR HEATING COILS

Inside Diameter of Pipe in Inches	Wall Thickness in Inches	Outside Diameter in Inches	Weight per Ft. lbs.	Sq. Ft. Outside Surface Area per 100 Ft. Length	Maximum Steam Pressure Lbs. per Sq. In.	Corresponding Temperature in °F
3/4	1/8	1	1.69	26.18	30	274
3/4	3/16	1 1/8	2.72	29.48	40	287
3/4	1/4	1 1/4	3.87	32.73	50	298
1	3/16	1 3/8	3.44	36.01	30	274
1	1/4	1 1/2	4.83	39.28	40	287
1	5/16	1 5/8	6.34	42.81	50	298
1 1/4	3/16	1 5/8	4.17	42.81	30	274
1 1/4	5/16	1 7/8	7.54	49.12	40	287
1 1/4	3/8	2	9.42	52.36	50	298

HEATING COIL FORMULA

For Calculating Length of Lead Pipe Needed for Heating Solutions—Time 1 Hour

$$\text{Mean temperature difference } ^\circ\text{F.} = \frac{(T-T_1)-(T-T_2)}{2.3 \log_{10} \frac{(T-T_1)}{(T-T_2)}}$$

where T = Temperature of steam or heating medium in $^\circ\text{F}$.

T_1 = Initial temperature of solution in $^\circ\text{F}$.

T_2 = Final temperature of solution in $^\circ\text{F}$.

Length of pipe required =

$$\frac{V \times W \times (T_2 - T_1) \times Sp \times 12}{H \times M \times D \times 3.1416}$$

where V = Volume of solution in gallons

W = Weight of solution in lbs. per gal.

T_2 = Temperature to which solution is to be heated in $^\circ\text{F}$.

T_1 = Initial temperature of solution in $^\circ\text{F}$.

Sp = Specific heat of solution.

H = Heat transfer in B.t.u./sq. ft./ $^\circ\text{F}$ /hr.
Varies from 50 to 150. See note below.

M = Mean temperature difference $^\circ\text{F}$.

D = Outside diameter of lead pipe in inches

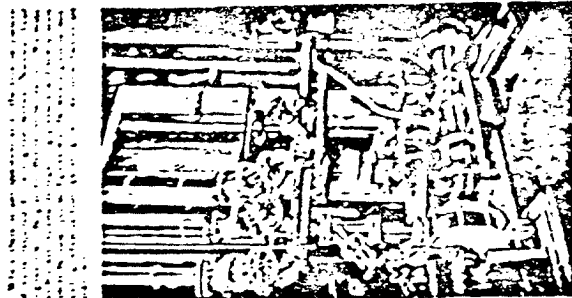
NOTE: H varies with the outside film conductivity of solution, the inside film conductivity of heating medium, the lead pipe wall thickness, the agitation outside the coil, and the speed of flow inside the coil. For a thorough consideration of heat transfer problems, consult engineering books on the subject.

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NLI 115287

ACID HANDLING Valves • Fittings • Pumps • Lined Pipe

Under the trade name, T-lined, National Lead Company manufactures and distributes an chemical resistant the world over, complete line of acid handling valves, fittings, pumps and lined pipe.



When they are used in acid handling applications, T-lined valves, fittings, pumps and lined pipe are the only acid resistant equipment available. T-lined valves, fittings, pumps and lined pipe are made of a special alloy of lead which is resistant to all acids, including sulfuric, hydrochloric, nitric, phosphoric, acetic, and many others. This material is also resistant to all alkalis, including sodium hydroxide, potassium hydroxide, and ammonia. T-lined equipment is available in a wide range of sizes and pressures, and is designed to meet the most demanding acid handling applications. T-lined equipment is also available in a wide range of materials, including lead, steel, and aluminum. T-lined equipment is the only acid resistant equipment available, and is the only equipment that can be used in all acid handling applications.

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ENGINEERING DATA SAFE WORKING PRESSURES

For Lined Pipe, See Working Pressure of Pipe at Various Temperatures

Temperature	Working Pressure (psi)	Working Pressure (psi)	Working Pressure (psi)	Working Pressure (psi)	Working Pressure (psi)
0	100	100	100	100	100
100	100	100	100	100	100
200	100	100	100	100	100
300	100	100	100	100	100
400	100	100	100	100	100
500	100	100	100	100	100
600	100	100	100	100	100
700	100	100	100	100	100
800	100	100	100	100	100
900	100	100	100	100	100

For Lined Pipe, See Working Pressure of Pipe at Various Temperatures

For Lined Pipe, See Working Pressure of Pipe at Various Temperatures

FEET OF PIPE REQUIRED TO HEAT AQUEOUS SOLUTIONS

Temperature	Feet of Pipe Required	Feet of Pipe Required	Feet of Pipe Required	Feet of Pipe Required	Feet of Pipe Required
0	100	100	100	100	100
100	100	100	100	100	100
200	100	100	100	100	100
300	100	100	100	100	100
400	100	100	100	100	100
500	100	100	100	100	100
600	100	100	100	100	100
700	100	100	100	100	100
800	100	100	100	100	100
900	100	100	100	100	100

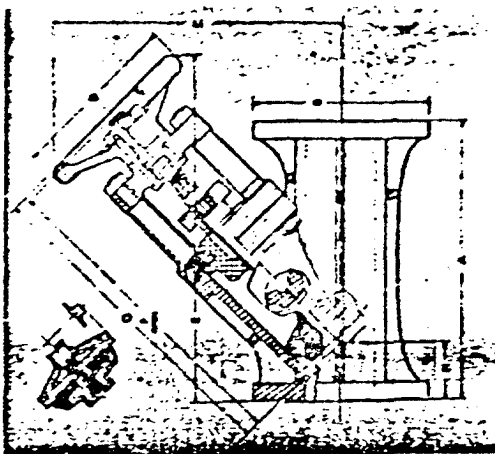
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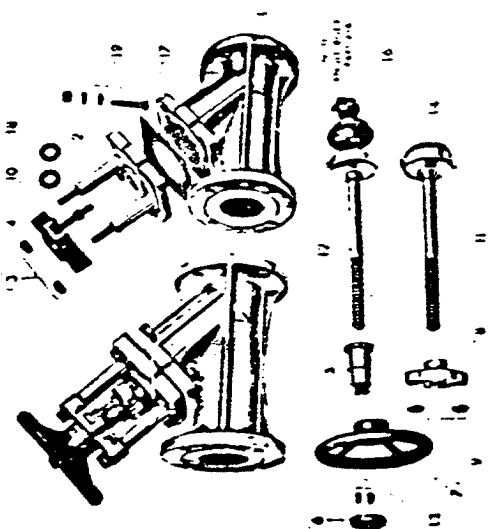
NLI 115288

CHEM-RAYON VALVE - HARD LEAD - Y PATTERN

PART NO.	PART NAME
1	Y Body
2	Y Head
3	Y Head Cap Nut (12)
4	Y Head Cap
5	Y Head Bolt
6	Y Head Nut
7	Y Head Washer
8	Y Head Seal
9	Y Head Gasket
10	Y Head O-ring
11	Y Head Plug
12	Y Head Pin
13	Y Head Screw
14	Y Head Bolt
15	Y Head Nut
16	Y Head Washer
17	Y Head Seal
18	Y Head Gasket
19	Y Head O-ring
20	Y Head Plug
21	Y Head Pin
22	Y Head Screw
23	Y Head Bolt
24	Y Head Nut
25	Y Head Washer
26	Y Head Seal
27	Y Head Gasket
28	Y Head O-ring
29	Y Head Plug
30	Y Head Pin
31	Y Head Screw
32	Y Head Bolt
33	Y Head Nut
34	Y Head Washer
35	Y Head Seal
36	Y Head Gasket
37	Y Head O-ring
38	Y Head Plug
39	Y Head Pin
40	Y Head Screw
41	Y Head Bolt
42	Y Head Nut
43	Y Head Washer
44	Y Head Seal
45	Y Head Gasket
46	Y Head O-ring
47	Y Head Plug
48	Y Head Pin
49	Y Head Screw
50	Y Head Bolt
51	Y Head Nut
52	Y Head Washer
53	Y Head Seal
54	Y Head Gasket
55	Y Head O-ring
56	Y Head Plug
57	Y Head Pin
58	Y Head Screw
59	Y Head Bolt
60	Y Head Nut
61	Y Head Washer
62	Y Head Seal
63	Y Head Gasket
64	Y Head O-ring
65	Y Head Plug
66	Y Head Pin
67	Y Head Screw
68	Y Head Bolt
69	Y Head Nut
70	Y Head Washer
71	Y Head Seal
72	Y Head Gasket
73	Y Head O-ring
74	Y Head Plug
75	Y Head Pin
76	Y Head Screw
77	Y Head Bolt
78	Y Head Nut
79	Y Head Washer
80	Y Head Seal
81	Y Head Gasket
82	Y Head O-ring
83	Y Head Plug
84	Y Head Pin
85	Y Head Screw
86	Y Head Bolt
87	Y Head Nut
88	Y Head Washer
89	Y Head Seal
90	Y Head Gasket
91	Y Head O-ring
92	Y Head Plug
93	Y Head Pin
94	Y Head Screw
95	Y Head Bolt
96	Y Head Nut
97	Y Head Washer
98	Y Head Seal
99	Y Head Gasket
100	Y Head O-ring



ITEM NO.	ITEM NAME
1	Y Body
2	Y Head
3	Y Head Cap Nut (12)
4	Y Head Cap
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18	Y Head Gasket
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23	Y Head Bolt
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28	Y Head O-ring
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47	Y Head Plug
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55	Y Head O-ring
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59	Y Head Bolt
60	Y Head Nut
61	Y Head Washer
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64	Y Head O-ring
65	Y Head Plug
66	Y Head Pin
67	Y Head Screw
68	Y Head Bolt
69	Y Head Nut
70	Y Head Washer
71	Y Head Seal
72	Y Head Gasket
73	Y Head O-ring
74	Y Head Plug
75	Y Head Pin
76	Y Head Screw
77	Y Head Bolt
78	Y Head Nut
79	Y Head Washer
80	Y Head Seal
81	Y Head Gasket
82	Y Head O-ring
83	Y Head Plug
84	Y Head Pin
85	Y Head Screw
86	Y Head Bolt
87	Y Head Nut
88	Y Head Washer
89	Y Head Seal
90	Y Head Gasket
91	Y Head O-ring
92	Y Head Plug
93	Y Head Pin
94	Y Head Screw
95	Y Head Bolt
96	Y Head Nut
97	Y Head Washer
98	Y Head Seal
99	Y Head Gasket
100	Y Head O-ring



"United" CHEM-RAYON VALVE - HARD LEAD

Y PATTERN

With perforated and variable lead, this Chem-Rayon Valve is made in both "Y" and "Angle" patterns. The lead is cast hard lead, mentioned in head lead but is greatly increased the strength of body and flanges. The flange is of hard lead, reinforced with a steel insert. The valve contains of steel studs which are secured with the flange and completely covered with hard lead. The stem, which is also hard lead inserted, and the yoke backing are of bronze composition. The working box is deep, permitting the use of a generous quantity of special seal retaining packing. Packing can be replaced when the valve is under pressure. The valve is equipped with solid lead plug integral with the stem, or with removable plug due to seal retaining effect.

ITEM NO.	ITEM NAME
1	Y Body
2	Y Head
3	Y Head Cap Nut (12)
4	Y Head Cap
5	Y Head Bolt
6	Y Head Nut
7	Y Head Washer
8	Y Head Seal
9	Y Head Gasket
10	Y Head O-ring
11	Y Head Plug
12	Y Head Pin
13	Y Head Screw
14	Y Head Bolt
15	Y Head Nut
16	Y Head Washer
17	Y Head Seal
18	Y Head Gasket
19	Y Head O-ring
20	Y Head Plug
21	Y Head Pin
22	Y Head Screw
23	Y Head Bolt
24	Y Head Nut
25	Y Head Washer
26	Y Head Seal
27	Y Head Gasket
28	Y Head O-ring
29	Y Head Plug
30	Y Head Pin
31	Y Head Screw
32	Y Head Bolt
33	Y Head Nut
34	Y Head Washer
35	Y Head Seal
36	Y Head Gasket
37	Y Head O-ring
38	Y Head Plug
39	Y Head Pin
40	Y Head Screw
41	Y Head Bolt
42	Y Head Nut
43	Y Head Washer
44	Y Head Seal
45	Y Head Gasket
46	Y Head O-ring
47	Y Head Plug
48	Y Head Pin
49	Y Head Screw
50	Y Head Bolt
51	Y Head Nut
52	Y Head Washer
53	Y Head Seal
54	Y Head Gasket
55	Y Head O-ring
56	Y Head Plug
57	Y Head Pin
58	Y Head Screw
59	Y Head Bolt
60	Y Head Nut
61	Y Head Washer
62	Y Head Seal
63	Y Head Gasket
64	Y Head O-ring
65	Y Head Plug
66	Y Head Pin
67	Y Head Screw
68	Y Head Bolt
69	Y Head Nut
70	Y Head Washer
71	Y Head Seal
72	Y Head Gasket
73	Y Head O-ring
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75	Y Head Pin
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82	Y Head O-ring
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90	Y Head Gasket
91	Y Head O-ring
92	Y Head Plug
93	Y Head Pin
94	Y Head Screw
95	Y Head Bolt
96	Y Head Nut
97	Y Head Washer
98	Y Head Seal
99	Y Head Gasket
100	Y Head O-ring

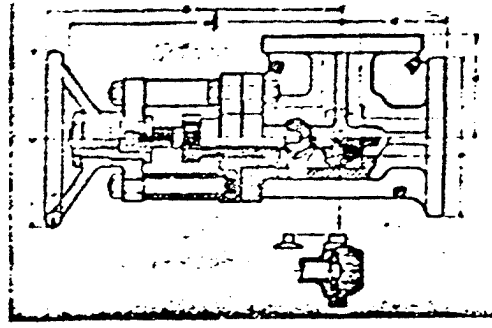
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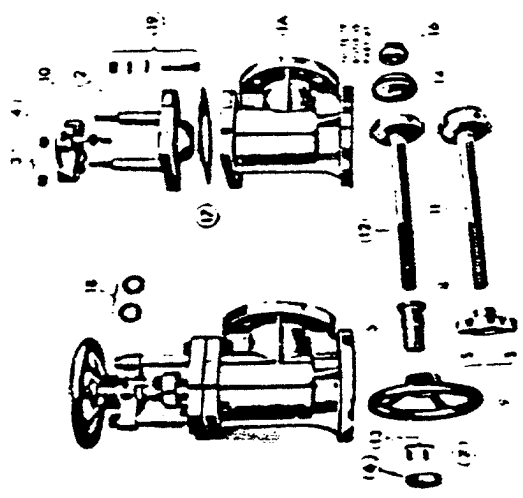
NLI 115289

CHEM-RAYON VALVE-HARD HEAD-ANGLE PATTERN

Part No.	Part Name	Part Material
1	Angle Plug	Steel
2	Bracket	Steel
3	Bracket Top Nut (1)	Steel
4	Bracket Top	Steel
5	Bracket Nut	Steel
6	Bracket Plug	Steel
7	Bracket Plug	Steel
8	Bracket Plug	Steel
9	Bracket Plug	Steel
10	Bracket Plug	Steel
11	Bracket Plug	Steel
12	Bracket Plug	Steel
13	Bracket Plug	Steel
14	Bracket Plug	Steel
15	Bracket Plug	Steel
16	Bracket Plug	Steel
17	Bracket Plug	Steel
18	Bracket Plug	Steel
19	Bracket Plug	Steel



Part No.	Part Name	Part Material
1	Angle Plug	Steel
2	Bracket	Steel
3	Bracket Top Nut (1)	Steel
4	Bracket Top	Steel
5	Bracket Nut	Steel
6	Bracket Plug	Steel
7	Bracket Plug	Steel
8	Bracket Plug	Steel
9	Bracket Plug	Steel
10	Bracket Plug	Steel
11	Bracket Plug	Steel
12	Bracket Plug	Steel
13	Bracket Plug	Steel
14	Bracket Plug	Steel
15	Bracket Plug	Steel
16	Bracket Plug	Steel
17	Bracket Plug	Steel
18	Bracket Plug	Steel
19	Bracket Plug	Steel



"United" CHEM-RAYON VALVE-HARD LEAD

ANGLE PATTERN

Sample for the difference in pattern, this Chem-Rayon Valve has the same features as the "Q" pattern in body is of hard lead, with reinforcing hard lead lines. It comes in hard lead with steel inserts reinforcement. The valve, which are integral with the bracket, are heavily coated with hard lead and valve body are of bronze composition. The valve is coated with hard lead. The valve body has large quantity of packing which when necessary, may be replaced while valve is under pressure. The valve is furnished with steel lead plug integral with the stem or with removable plug due to wall reinforcing rubber.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

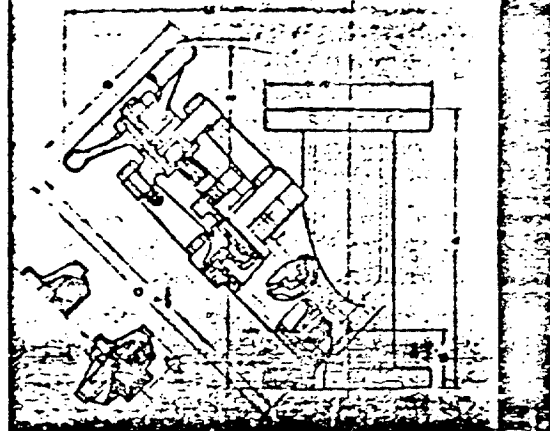
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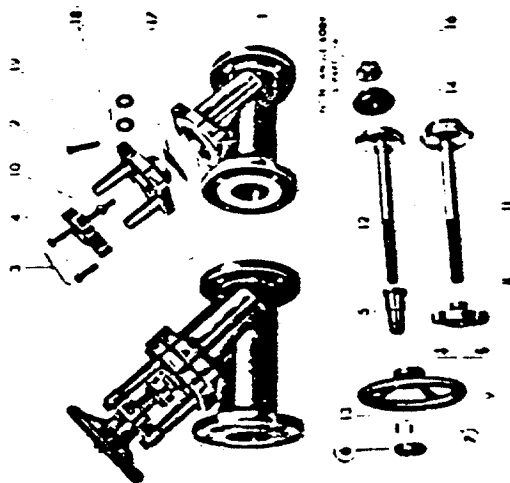
TYPE C VALVE - LEAD LINED - A PATTERN

Part No.	Part Name	Part Material
1	Valve Body	Cast Iron
2	Valve Seat	Cast Iron
3	Valve Stem	Cast Iron
4	Valve Nut	Cast Iron
5	Valve Spring	Cast Iron
6	Valve Spring Retainer	Cast Iron
7	Valve Spring Washer	Cast Iron
8	Valve Spring Lock	Cast Iron
9	Valve Spring Lock Washer	Cast Iron
10	Valve Spring Lock Nut	Cast Iron
11	Valve Spring Lock Washer	Cast Iron
12	Valve Spring Lock Nut	Cast Iron
13	Valve Spring Lock Washer	Cast Iron
14	Valve Spring Lock Nut	Cast Iron
15	Valve Spring Lock Washer	Cast Iron
16	Valve Spring Lock Nut	Cast Iron
17	Valve Spring Lock Washer	Cast Iron
18	Valve Spring Lock Nut	Cast Iron
19	Valve Spring Lock Washer	Cast Iron
20	Valve Spring Lock Nut	Cast Iron



Dimensions in Inches

Part No.	Dimension	Value
1	Overall Length	1.00
2	Valve Stem Length	0.50
3	Valve Nut Length	0.25
4	Valve Spring Length	0.10
5	Valve Spring Retainer Length	0.15
6	Valve Spring Washer Length	0.05
7	Valve Spring Lock Length	0.10
8	Valve Spring Lock Washer Length	0.05
9	Valve Spring Lock Nut Length	0.10
10	Valve Spring Lock Washer Length	0.05
11	Valve Spring Lock Nut Length	0.10
12	Valve Spring Lock Washer Length	0.05
13	Valve Spring Lock Nut Length	0.10
14	Valve Spring Lock Washer Length	0.05
15	Valve Spring Lock Nut Length	0.10
16	Valve Spring Lock Washer Length	0.05
17	Valve Spring Lock Nut Length	0.10
18	Valve Spring Lock Washer Length	0.05
19	Valve Spring Lock Nut Length	0.10
20	Valve Spring Lock Washer Length	0.05



"United" TYPE C VALVE - LEAD LINED

The general construction and operating characteristics of the Type C Valve is similar to the Type B Valve. The important difference is in its construction. This valve has both body and bonnet of cast iron or cast steel for greater overall strength. Both chambers are heavily lined with lead and having lead head. All other parts that come in contact with acid are heavily covered with lead head. Full flow area is assured since the stem and seat body is one piece.

"A" PATTERN

Part No.	Part Name	Part Material
1	Valve Body	Cast Iron
2	Valve Seat	Cast Iron
3	Valve Stem	Cast Iron
4	Valve Nut	Cast Iron
5	Valve Spring	Cast Iron
6	Valve Spring Retainer	Cast Iron
7	Valve Spring Washer	Cast Iron
8	Valve Spring Lock	Cast Iron
9	Valve Spring Lock Washer	Cast Iron
10	Valve Spring Lock Nut	Cast Iron
11	Valve Spring Lock Washer	Cast Iron
12	Valve Spring Lock Nut	Cast Iron
13	Valve Spring Lock Washer	Cast Iron
14	Valve Spring Lock Nut	Cast Iron
15	Valve Spring Lock Washer	Cast Iron
16	Valve Spring Lock Nut	Cast Iron
17	Valve Spring Lock Washer	Cast Iron
18	Valve Spring Lock Nut	Cast Iron
19	Valve Spring Lock Washer	Cast Iron
20	Valve Spring Lock Nut	Cast Iron

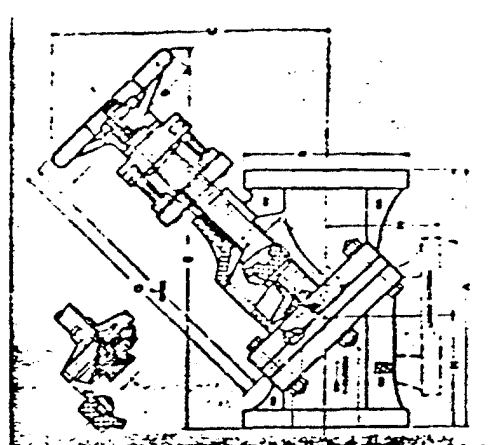
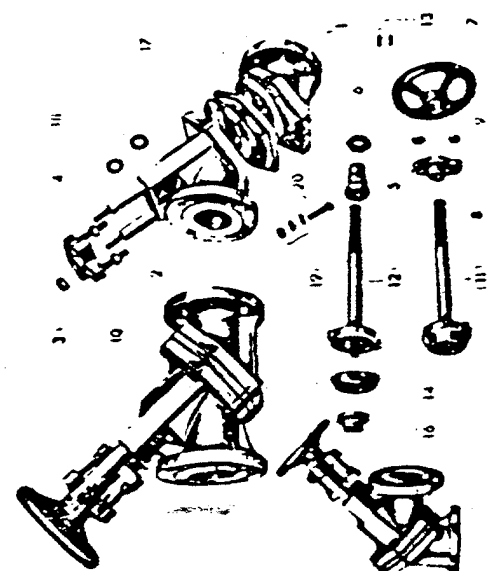
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NIJ 115292

TYPE K VALVE • HARVEY • ANGEL and PATRICKS

POST NAME	POST ADDRESS
1	Paul, Geo
2	Paul, John
3	Paul, John
4	Paul, John
5	Paul, John
6	Paul, John
7	Paul, John
8	Paul, John
9	Paul, John
10	Paul, John
11	Paul, John
12	Paul, John
13	Paul, John
14	Paul, John
15	Paul, John
16	Paul, John
17	Paul, John
18	Paul, John
19	Paul, John
20	Paul, John

[illegible]

...COLUMBIA TYPE R VALVE-HARD LEAD

This variable value is inconsistent at the same weekly intervals and is recommended to the same scoring standards as the parameter from Rating match in spin ball tennis. However, attitude gives an edge to the player. A single pattern is a "1" and we view this special consideration for more playing of the rest and play of an ally, making the opponent to move speed conditions. Two values results are furnished with it and to indicate plays and had was. Ally plays and was, however, are available.

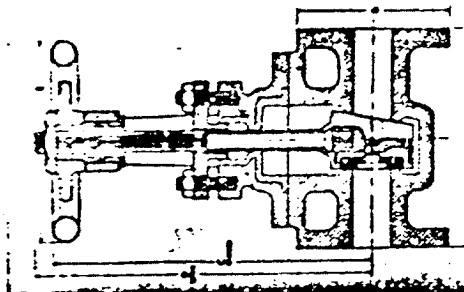
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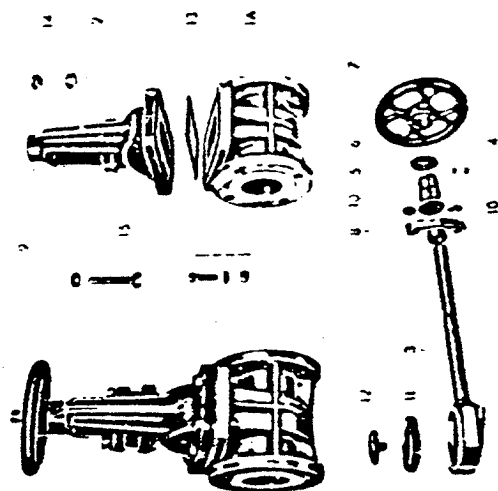
NLI 115294

GOVERNMENT PRINTING OFFICE: 1974

UNIT #	PART NAME	DATE MANUFACTURED
1	Body	12/1/1964
2	Pinion	12/1/1964
3	Control Valve Assembly	12/1/1964
4	Ball	12/1/1964
5	Pushing Arm	12/1/1964
6	Pushing Arm	12/1/1964
7	Control Valve	12/1/1964
8	Control Valve and Pinion	12/1/1964
9	Control Valve	12/1/1964
10	Control Valve	12/1/1964
11	Pushing Arm	12/1/1964
12	Pushing Arm	12/1/1964
13	Pushing Arm	12/1/1964
14	Pushing Arm	12/1/1964
15	Pushing Arm	12/1/1964
16	Pushing Arm	12/1/1964
17	Pushing Arm	12/1/1964
18	Pushing Arm	12/1/1964
19	Pushing Arm	12/1/1964
20	Pushing Arm	12/1/1964
21	Pushing Arm	12/1/1964
22	Pushing Arm	12/1/1964
23	Pushing Arm	12/1/1964
24	Pushing Arm	12/1/1964
25	Pushing Arm	12/1/1964
26	Pushing Arm	12/1/1964
27	Pushing Arm	12/1/1964
28	Pushing Arm	12/1/1964
29	Pushing Arm	12/1/1964
30	Pushing Arm	12/1/1964
31	Pushing Arm	12/1/1964
32	Pushing Arm	12/1/1964
33	Pushing Arm	12/1/1964
34	Pushing Arm	12/1/1964
35	Pushing Arm	12/1/1964
36	Pushing Arm	12/1/1964
37	Pushing Arm	12/1/1964
38	Pushing Arm	12/1/1964
39	Pushing Arm	12/1/1964
40	Pushing Arm	12/1/1964
41	Pushing Arm	12/1/1964
42	Pushing Arm	12/1/1964
43	Pushing Arm	12/1/1964
44	Pushing Arm	12/1/1964
45	Pushing Arm	12/1/1964
46	Pushing Arm	12/1/1964
47	Pushing Arm	12/1/1964
48	Pushing Arm	12/1/1964
49	Pushing Arm	12/1/1964
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62	Pushing Arm	12/1/1964
63	Pushing Arm	12/1/1964
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65	Pushing Arm	12/1/1964
66	Pushing Arm	12/1/1964
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69	Pushing Arm	12/1/1964
70	Pushing Arm	12/1/1964
71	Pushing Arm	12/1/1964
72	Pushing Arm	12/1/1964
73	Pushing Arm	12/1/1964
74	Pushing Arm	12/1/1964
75	Pushing Arm	12/1/1964
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85	Pushing Arm	12/1/1964
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90	Pushing Arm	12/1/1964
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92	Pushing Arm	12/1/1964
93	Pushing Arm	12/1/1964
94	Pushing Arm	12/1/1964
95	Pushing Arm	12/1/1964
96	Pushing Arm	12/1/1964
97	Pushing Arm	12/1/1964
98	Pushing Arm	12/1/1964
99	Pushing Arm	12/1/1964
100	Pushing Arm	12/1/1964



FORM NO. 10-100



"United" GATE VALVE—HARD LEAD

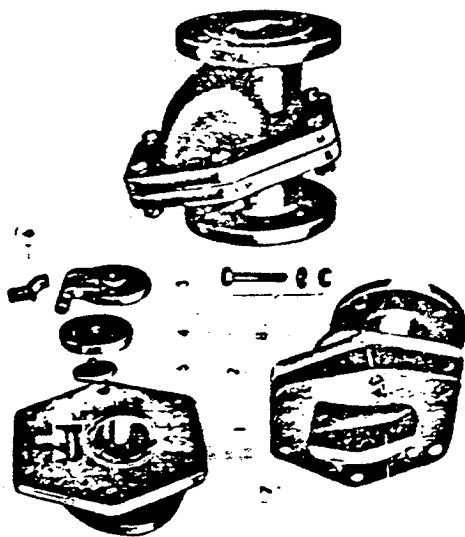
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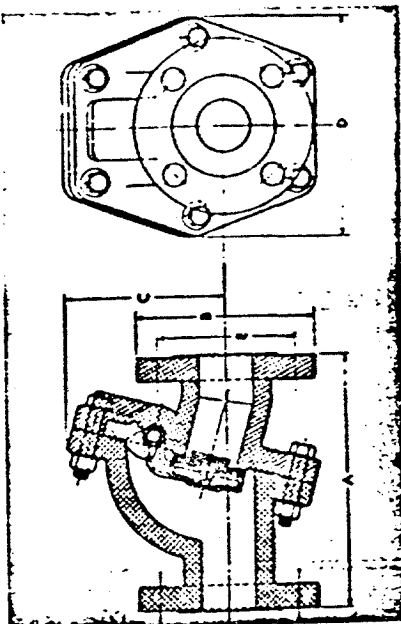
NLI 115296



“C/ndt” TYPE D CHECK VALVE—HARD LEAD

[illegible]

Then, back water, how a spitefully healthy man, whose neck, possibly, replaced the neck of the water, and who to many, this operating conditions for the time being, the water is suitable, back to stand through water. The subject is brought to water, completely out of the flow way, and as we are looking slightly higher, the flow stream is to prevent back up on the flow.



TYPE D CHUCK VALVE		TYPE D CHUCK VALVE	
ORDINATE		ORDINATE	
POINT NO.	POINT NAME	POINT NO.	POINT NAME
1	Back Inlet	10	W ₂ Venturi Inlet
2	Back Outlet	11	W ₂ Venturi Outlet
3	Clapper	12	Clapper
4	Inlet	13	Inlet
5	Flow Regulator	14	Flow Regulator
6	Clapper Return	15	W ₂ Venturi Inlet
7	Outlet	16	Outlet
8	Back Outlet, Vent, W ₂ Inlet	17	Back Outlet, Vent, W ₂ Inlet

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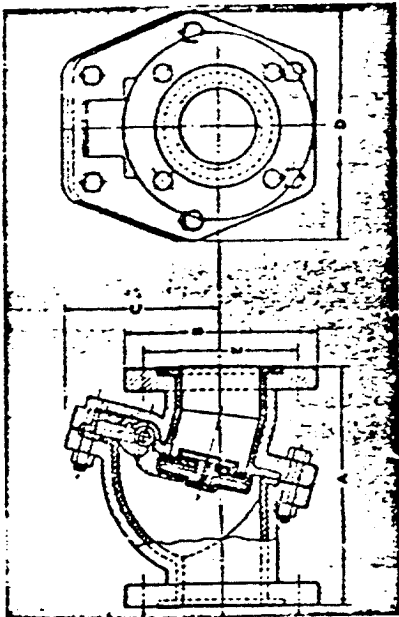
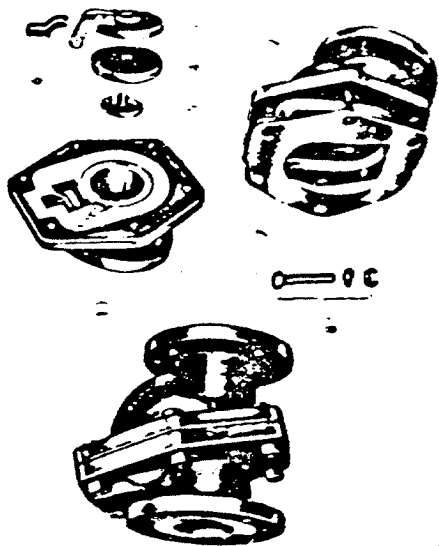
NLI 115297

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United TYPE D CHECK VALVE--LEAD LINED

Part No.	Part Name	Part Material
1	Body	Lead Lined Cast Iron
2	Ball	Lead Lined Cast Iron
3	Spring	Lead Lined Bronze
4	Pin	Brass
5	Pin Nut	Lead Lined Bronze
6	Spring Retainer	W.C. Instrument Lead
7	Washer	Brass
8	Pin Bolt, Nut	Steel

These valves are designed for use in the lead and lead lined systems. They are available in the following sizes: 1/2", 3/4", 1", 1 1/2", 2", 3", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24", 30", 36", 42", 48", 60", 72", 84", 96", 108", 120", 144", 168", 192", 216", 240", 288", 324", 360", 408", 456", 504", 576", 648", 720", 800", 900", 1000", 1100", 1200", 1300", 1400", 1500", 1600", 1800", 2000", 2200", 2400", 2600", 2800", 3000", 3200", 3400", 3600", 3800", 4000", 4200", 4400", 4600", 4800", 5000", 5200", 5400", 5600", 5800", 6000", 6200", 6400", 6600", 6800", 7000", 7200", 7400", 7600", 7800", 8000", 8200", 8400", 8600", 8800", 9000", 9200", 9400", 9600", 9800", 10000".



Part No.	Part Name	Part Material
1	Body	Lead Lined Cast Iron
2	Ball	Lead Lined Cast Iron
3	Spring	Lead Lined Bronze
4	Pin	Brass
5	Pin Nut	Lead Lined Bronze
6	Spring Retainer	W.C. Instrument Lead
7	Washer	Brass
8	Pin Bolt, Nut	Steel

Part No.	Part Name	Part Material
1	Body	Lead Lined Cast Iron
2	Ball	Lead Lined Cast Iron
3	Spring	Lead Lined Bronze
4	Pin	Brass
5	Pin Nut	Lead Lined Bronze
6	Spring Retainer	W.C. Instrument Lead
7	Washer	Brass
8	Pin Bolt, Nut	Steel

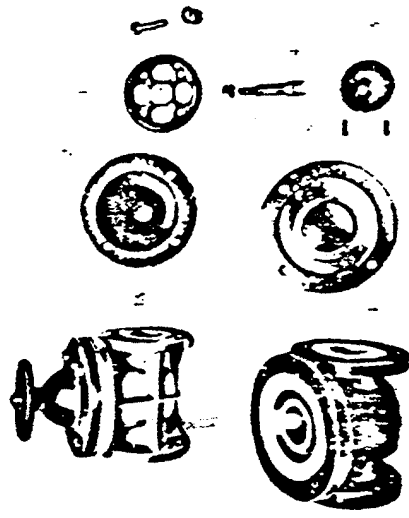
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NLI 115298

**DIAPHRAGM VALVE
LEAD LINED or HARD LEAD**

PART NO.	PART NAME	PART MATERIAL
1	Body	Cast Iron
2	Ball	Steel
3	Ball	Steel
4	Ball	Steel
5	Ball	Steel
6	Ball	Steel
7	Ball	Steel
8	Ball	Steel
9	Ball	Steel
10	Ball	Steel
11	Ball	Steel
12	Ball	Steel
13	Ball	Steel
14	Ball	Steel
15	Ball	Steel
16	Ball	Steel
17	Ball	Steel
18	Ball	Steel
19	Ball	Steel
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93	Ball	Steel
94	Ball	Steel
95	Ball	Steel
96	Ball	Steel
97	Ball	Steel
98	Ball	Steel
99	Ball	Steel
100	Ball	Steel



**United DIAPHRAGM VALVE
LEAD LINED or HARD LEAD**

For this style of valve the flow of the medium is controlled by a gas rubber diaphragm. The working box is aluminum. Valves are available in hard lead or in lead lined with hard lead linings.

As this feature for its construction, it offers a type of valve which is made in the United States and is of the best quality. It is a complete valve of special construction for use in lead with the same type.

Size	Weight	Material
1/2"	1.5	Steel
3/4"	2.5	Steel
1"	3.5	Steel
1 1/2"	5.5	Steel
2"	7.5	Steel
2 1/2"	10.5	Steel
3"	13.5	Steel
3 1/2"	16.5	Steel
4"	19.5	Steel
4 1/2"	22.5	Steel
5"	25.5	Steel
5 1/2"	28.5	Steel
6"	31.5	Steel
6 1/2"	34.5	Steel
7"	37.5	Steel
7 1/2"	40.5	Steel
8"	43.5	Steel
8 1/2"	46.5	Steel
9"	49.5	Steel
9 1/2"	52.5	Steel
10"	55.5	Steel
10 1/2"	58.5	Steel
11"	61.5	Steel
11 1/2"	64.5	Steel
12"	67.5	Steel
12 1/2"	70.5	Steel
13"	73.5	Steel
13 1/2"	76.5	Steel
14"	79.5	Steel
14 1/2"	82.5	Steel
15"	85.5	Steel
15 1/2"	88.5	Steel
16"	91.5	Steel
16 1/2"	94.5	Steel
17"	97.5	Steel
17 1/2"	100.5	Steel
18"	103.5	Steel
18 1/2"	106.5	Steel
19"	109.5	Steel
19 1/2"	112.5	Steel
20"	115.5	Steel
20 1/2"	118.5	Steel
21"	121.5	Steel
21 1/2"	124.5	Steel
22"	127.5	Steel
22 1/2"	130.5	Steel
23"	133.5	Steel
23 1/2"	136.5	Steel
24"	139.5	Steel
24 1/2"	142.5	Steel
25"	145.5	Steel
25 1/2"	148.5	Steel
26"	151.5	Steel
26 1/2"	154.5	Steel
27"	157.5	Steel
27 1/2"	160.5	Steel
28"	163.5	Steel
28 1/2"	166.5	Steel
29"	169.5	Steel
29 1/2"	172.5	Steel
30"	175.5	Steel
30 1/2"	178.5	Steel
31"	181.5	Steel
31 1/2"	184.5	Steel
32"	187.5	Steel
32 1/2"	190.5	Steel
33"	193.5	Steel
33 1/2"	196.5	Steel
34"	199.5	Steel
34 1/2"	202.5	Steel
35"	205.5	Steel
35 1/2"	208.5	Steel
36"	211.5	Steel
36 1/2"	214.5	Steel
37"	217.5	Steel
37 1/2"	220.5	Steel
38"	223.5	Steel
38 1/2"	226.5	Steel
39"	229.5	Steel
39 1/2"	232.5	Steel
40"	235.5	Steel
40 1/2"	238.5	Steel
41"	241.5	Steel
41 1/2"	244.5	Steel
42"	247.5	Steel
42 1/2"	250.5	Steel
43"	253.5	Steel
43 1/2"	256.5	Steel
44"	259.5	Steel
44 1/2"	262.5	Steel
45"	265.5	Steel
45 1/2"	268.5	Steel
46"	271.5	Steel
46 1/2"	274.5	Steel
47"	277.5	Steel
47 1/2"	280.5	Steel
48"	283.5	Steel
48 1/2"	286.5	Steel
49"	289.5	Steel
49 1/2"	292.5	Steel
50"	295.5	Steel
50 1/2"	298.5	Steel
51"	301.5	Steel
51 1/2"	304.5	Steel
52"	307.5	Steel
52 1/2"	310.5	Steel
53"	313.5	Steel
53 1/2"	316.5	Steel
54"	319.5	Steel
54 1/2"	322.5	Steel
55"	325.5	Steel
55 1/2"	328.5	Steel
56"	331.5	Steel
56 1/2"	334.5	Steel
57"	337.5	Steel
57 1/2"	340.5	Steel
58"	343.5	Steel
58 1/2"	346.5	Steel
59"	349.5	Steel
59 1/2"	352.5	Steel
60"	355.5	Steel
60 1/2"	358.5	Steel
61"	361.5	Steel
61 1/2"	364.5	Steel
62"	367.5	Steel
62 1/2"	370.5	Steel
63"	373.5	Steel
63 1/2"	376.5	Steel
64"	379.5	Steel
64 1/2"	382.5	Steel
65"	385.5	Steel
65 1/2"	388.5	Steel
66"	391.5	Steel
66 1/2"	394.5	Steel
67"	397.5	Steel
67 1/2"	400.5	Steel
68"	403.5	Steel
68 1/2"	406.5	Steel
69"	409.5	Steel
69 1/2"	412.5	Steel
70"	415.5	Steel
70 1/2"	418.5	Steel
71"	421.5	Steel
71 1/2"	424.5	Steel
72"	427.5	Steel
72 1/2"	430.5	Steel
73"	433.5	Steel
73 1/2"	436.5	Steel
74"	439.5	Steel
74 1/2"	442.5	Steel
75"	445.5	Steel
75 1/2"	448.5	Steel
76"	451.5	Steel
76 1/2"	454.5	Steel
77"	457.5	Steel
77 1/2"	460.5	Steel
78"	463.5	Steel
78 1/2"	466.5	Steel
79"	469.5	Steel
79 1/2"	472.5	Steel
80"	475.5	Steel
80 1/2"	478.5	Steel
81"	481.5	Steel
81 1/2"	484.5	Steel
82"	487.5	Steel
82 1/2"	490.5	Steel
83"	493.5	Steel
83 1/2"	496.5	Steel
84"	499.5	Steel
84 1/2"	502.5	Steel
85"	505.5	Steel
85 1/2"	508.5	Steel
86"	511.5	Steel
86 1/2"	514.5	Steel
87"	517.5	Steel
87 1/2"	520.5	Steel
88"	523.5	Steel
88 1/2"	526.5	Steel
89"	529.5	Steel
89 1/2"	532.5	Steel
90"	535.5	Steel
90 1/2"	538.5	Steel
91"	541.5	Steel
91 1/2"	544.5	Steel
92"	547.5	Steel
92 1/2"	550.5	Steel
93"	553.5	Steel
93 1/2"	556.5	Steel
94"	559.5	Steel
94 1/2"	562.5	Steel
95"	565.5	Steel
95 1/2"	568.5	Steel
96"	571.5	Steel
96 1/2"	574.5	Steel
97"	577.5	Steel
97 1/2"	580.5	Steel
98"	583.5	Steel
98 1/2"	586.5	Steel
99"	589.5	Steel
99 1/2"	592.5	Steel
100"	595.5	Steel

Lead lined and in use

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NLI 115299

"United" ACID PROOF-LEAD LINED IMPERIAL TYPE

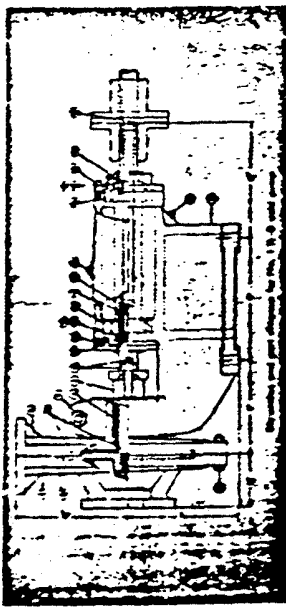


United Lead Lined Pipe is the only pipe that is designed for the purpose of resisting acid attack. It is made of lead and is lined with a special acid-resisting material. It is the only pipe that is designed for the purpose of resisting acid attack.

United Lead Lined Pipe is the only pipe that is designed for the purpose of resisting acid attack. It is made of lead and is lined with a special acid-resisting material. It is the only pipe that is designed for the purpose of resisting acid attack.

United Lead Lined Pipe is the only pipe that is designed for the purpose of resisting acid attack. It is made of lead and is lined with a special acid-resisting material. It is the only pipe that is designed for the purpose of resisting acid attack.

Size	Weight	Length
1/2"	1.5	10
3/4"	2.5	10
1"	3.5	10
1 1/4"	5.5	10
1 1/2"	6.5	10
2"	8.5	10
2 1/2"	11.5	10
3"	14.5	10
3 1/2"	17.5	10
4"	20.5	10
4 1/2"	23.5	10
5"	26.5	10
5 1/2"	29.5	10
6"	32.5	10
6 1/2"	35.5	10
7"	38.5	10
7 1/2"	41.5	10
8"	44.5	10
8 1/2"	47.5	10
9"	50.5	10
9 1/2"	53.5	10
10"	56.5	10
10 1/2"	59.5	10
11"	62.5	10
11 1/2"	65.5	10
12"	68.5	10
12 1/2"	71.5	10
13"	74.5	10
13 1/2"	77.5	10
14"	80.5	10
14 1/2"	83.5	10
15"	86.5	10
15 1/2"	89.5	10
16"	92.5	10
16 1/2"	95.5	10
17"	98.5	10
17 1/2"	101.5	10
18"	104.5	10
18 1/2"	107.5	10
19"	110.5	10
19 1/2"	113.5	10
20"	116.5	10
20 1/2"	119.5	10
21"	122.5	10
21 1/2"	125.5	10
22"	128.5	10
22 1/2"	131.5	10
23"	134.5	10
23 1/2"	137.5	10
24"	140.5	10
24 1/2"	143.5	10
25"	146.5	10
25 1/2"	149.5	10
26"	152.5	10
26 1/2"	155.5	10
27"	158.5	10
27 1/2"	161.5	10
28"	164.5	10
28 1/2"	167.5	10
29"	170.5	10
29 1/2"	173.5	10
30"	176.5	10
30 1/2"	179.5	10
31"	182.5	10
31 1/2"	185.5	10
32"	188.5	10
32 1/2"	191.5	10
33"	194.5	10
33 1/2"	197.5	10
34"	200.5	10
34 1/2"	203.5	10
35"	206.5	10
35 1/2"	209.5	10
36"	212.5	10
36 1/2"	215.5	10
37"	218.5	10
37 1/2"	221.5	10
38"	224.5	10
38 1/2"	227.5	10
39"	230.5	10
39 1/2"	233.5	10
40"	236.5	10
40 1/2"	239.5	10
41"	242.5	10
41 1/2"	245.5	10
42"	248.5	10
42 1/2"	251.5	10
43"	254.5	10
43 1/2"	257.5	10
44"	260.5	10
44 1/2"	263.5	10
45"	266.5	10
45 1/2"	269.5	10
46"	272.5	10
46 1/2"	275.5	10
47"	278.5	10
47 1/2"	281.5	10
48"	284.5	10
48 1/2"	287.5	10
49"	290.5	10
49 1/2"	293.5	10
50"	296.5	10
50 1/2"	299.5	10
51"	302.5	10
51 1/2"	305.5	10
52"	308.5	10
52 1/2"	311.5	10
53"	314.5	10
53 1/2"	317.5	10
54"	320.5	10
54 1/2"	323.5	10
55"	326.5	10
55 1/2"	329.5	10
56"	332.5	10
56 1/2"	335.5	10
57"	338.5	10
57 1/2"	341.5	10
58"	344.5	10
58 1/2"	347.5	10
59"	350.5	10
59 1/2"	353.5	10
60"	356.5	10
60 1/2"	359.5	10
61"	362.5	10
61 1/2"	365.5	10
62"	368.5	10
62 1/2"	371.5	10
63"	374.5	10
63 1/2"	377.5	10
64"	380.5	10
64 1/2"	383.5	10
65"	386.5	10
65 1/2"	389.5	10
66"	392.5	10
66 1/2"	395.5	10
67"	398.5	10
67 1/2"	401.5	10
68"	404.5	10
68 1/2"	407.5	10
69"	410.5	10
69 1/2"	413.5	10
70"	416.5	10
70 1/2"	419.5	10
71"	422.5	10
71 1/2"	425.5	10
72"	428.5	10
72 1/2"	431.5	10
73"	434.5	10
73 1/2"	437.5	10
74"	440.5	10
74 1/2"	443.5	10
75"	446.5	10
75 1/2"	449.5	10
76"	452.5	10
76 1/2"	455.5	10
77"	458.5	10
77 1/2"	461.5	10
78"	464.5	10
78 1/2"	467.5	10
79"	470.5	10
79 1/2"	473.5	10
80"	476.5	10
80 1/2"	479.5	10
81"	482.5	10
81 1/2"	485.5	10
82"	488.5	10
82 1/2"	491.5	10
83"	494.5	10
83 1/2"	497.5	10
84"	500.5	10
84 1/2"	503.5	10
85"	506.5	10
85 1/2"	509.5	10
86"	512.5	10
86 1/2"	515.5	10
87"	518.5	10
87 1/2"	521.5	10
88"	524.5	10
88 1/2"	527.5	10
89"	530.5	10
89 1/2"	533.5	10
90"	536.5	10
90 1/2"	539.5	10
91"	542.5	10
91 1/2"	545.5	10
92"	548.5	10
92 1/2"	551.5	10
93"	554.5	10
93 1/2"	557.5	10
94"	560.5	10
94 1/2"	563.5	10
95"	566.5	10
95 1/2"	569.5	10
96"	572.5	10
96 1/2"	575.5	10
97"	578.5	10
97 1/2"	581.5	10
98"	584.5	10
98 1/2"	587.5	10
99"	590.5	10
99 1/2"	593.5	10
100"	596.5	10



Part Name	Part Number
1. Frame	101
2. Piston	102
3. Connecting Rod	103
4. Crankshaft	104
5. Flywheel	105
6. Valve Gear	106
7. Intake Valve	107
8. Exhaust Valve	108
9. Camshaft	109
10. Oil Pan	110
11. Water Pump	111
12. Fan	112
13. Belt Drive	113
14. Pulley	114
15. Drive Shaft	115
16. Gear Box	116
17. Output Shaft	117
18. Coupling	118
19. Drive Pulley	119
20. Driven Pulley	120
21. Belt	121
22. Frame	122
23. Piston	123
24. Connecting Rod	124
25. Crankshaft	125
26. Flywheel	126
27. Valve Gear	127
28. Intake Valve	128
29. Exhaust Valve	129
30. Camshaft	130
31. Oil Pan	131
32. Water Pump	132
33. Fan	133
34. Belt Drive	134
35. Pulley	135
36. Drive Shaft	136
37. Gear Box	137
38. Output Shaft	138
39. Coupling	139
40. Drive Pulley	140
41. Driven Pulley	141
42. Belt	142

"United" Lead Lined Pipe

Size	Weight	Length
1/2"	1.5	10
3/4"	2.5	10
1"	3.5	10
1 1/4"	5.5	10
1 1/2"	6.5	10
2"	8.5	10
2 1/2"	11.5	10
3"	14.5	10
3 1/2"	17.5	10
4"	20.5	10
4 1/2"	23.5	10
5"	26.5	10
5 1/2"	29.5	10
6"	32.5	10
6 1/2"	35.5	10
7"	38.5	10
7 1/2"	41.5	10
8"	44.5	10
8 1/2"	47.5	10
9"	50.5	10
9 1/2"	53.5	10
10"	56.5	10
10 1/2"	59.5	10
11"	62.5	10
11 1/2"	65.5	10
12"	68.5	10
12 1/2"	71.5	10
13"	74.5	10
13 1/2"	77.5	10
14"	80.5	10
14 1/2"	83.5	10
15"	86.5	10
15 1/2"	89.5	10
16"	92.5	10
16 1/2"	95.5	10
17"	98.5	10
17 1/2"	101.5	10
18"	104.5	10
18 1/2"	107.5	10
19"	110.5	10
19 1/2"	113.5	10
20"	116.5	10
20 1/2"	119.5	10
21"	122.5	10
21 1/2"	125.5	10
22"	128.5	10
22 1/2"	131.5	10
23"	134.5	10
23 1/2"	137.5	10
24"	140.5	10
24 1/2"	143.5	10
25"	146.5	10
25 1/2"	149.5	10
26"	152.5	10
26 1/2"	155.5	10
27"	158.5	10
27 1/2"	161.5	10
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31"	182.5	10
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34"	200.5	10
34 1/2"	203.5	10
35"	206.5	10
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36 1/2"	215.5	10
37"	218.5	10
37 1/2"	221.5	10
38"	224.5	10
38 1/2"	227.5	10
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39 1/2"	233.5	10
40"	236.5	10
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53"	314.5	10
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57"	338.5	10
57 1/2"	341.5	10
58"	344.5	10
58 1/2"	347.5	10
59"	350.5	10
59 1/2"	353.5	10
60"	356.5	10
60 1/2"	359.5	10
61"	362.5	10
61 1/2"	365.5	10
62"	368.5	10
62 1/2"	371.5	10
63"	374.5	10
63 1/2"	377.5	10
64"	380.5	10
64 1/2"	383.5	10
65"	386.5	

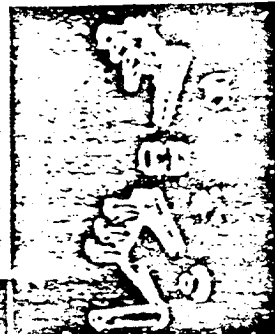
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NLI 115300

Corrosion Resistant Die Castings

Die castings made from aluminum alloys are well known for their resistance to corrosion. However, the corrosion resistance of these alloys can be improved by the use of special surface treatments. These treatments are applied to the surface of the casting and form a protective film which prevents the metal from reacting with the atmosphere. This film is usually made of a thin layer of oxide which is formed by anodizing the metal. This process is usually done in a solution of sulfuric acid. The anodizing process is usually done in a solution of sulfuric acid. The anodizing process is usually done in a solution of sulfuric acid.

In many cases, the corrosion resistance of aluminum alloys can be improved by the use of special surface treatments. These treatments are applied to the surface of the casting and form a protective film which prevents the metal from reacting with the atmosphere. This film is usually made of a thin layer of oxide which is formed by anodizing the metal. This process is usually done in a solution of sulfuric acid. The anodizing process is usually done in a solution of sulfuric acid.



"United"

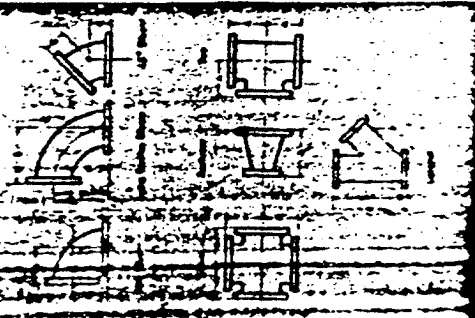
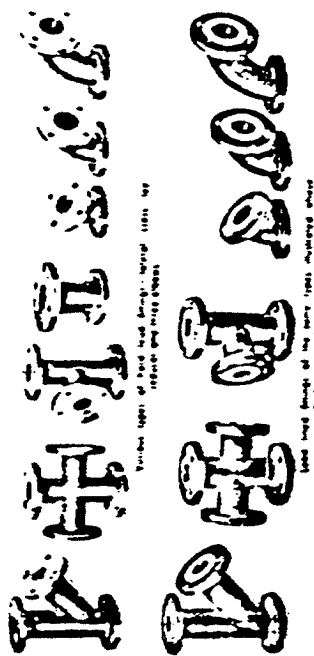
FLANGED FITTINGS HARD LEAD and LEAD FINED

United Flanged fittings are made of hard lead or lead fined and heavily lined with lead. The size and wall thickness are determined from your own pattern or that after they are cast they have a full line area. Flanges for drilling centers are the same as standard for cast iron pipe flange and flange fittings for 12 inch pipe. 45° and 60° are available. The flanged lead lined fittings are of the highest quality, both in design and workmanship.

UNITED DIMENSIONS SAME STANDARD
1/2" to 24" nominal diameter

Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Wall Thickness	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015
Flange Thickness	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015
Flange Diameter	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015

These flange fittings are available in 1/2" to 24" nominal diameter.

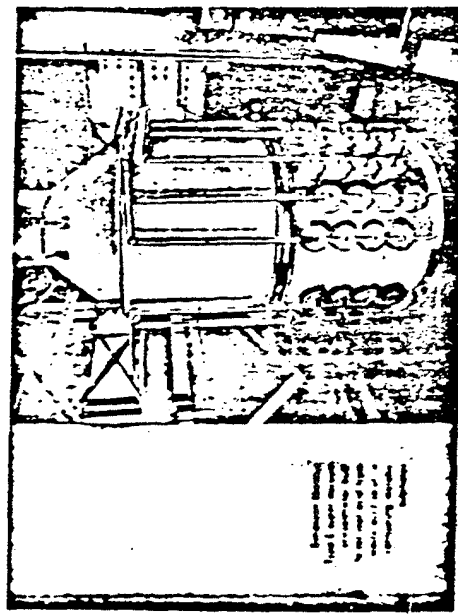


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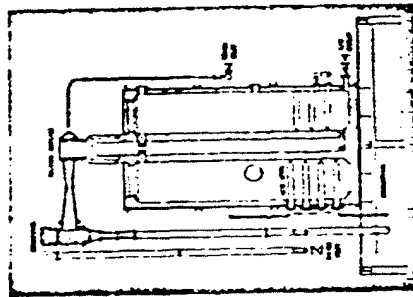
NLI 115301

Acid Recovery SIMONSON-MANTUUS VACUUM PROCESS

The most efficient way to recover acid from the waste of the chemical industry is by the Simonson-Mantius Vacuum Process. This process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner.



Consistent for the vacuum, chamber and stage in the process. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner.



When the acid is recovered from the waste of the chemical industry, it is a simple and efficient process. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner. The process is designed to recover acid from the waste of the chemical industry in a simple and efficient manner.

