



KRAISSL QUARTERLY

Published By

THE KRAISSL COMPANY

INCORPORATED

PUMPS-SEPARATORS-ENGINEERING EQUIPMENT

HACKENSACK, NEW JERSEY



Volume 20

July 1977

Number 3

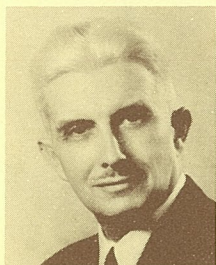
MUZZLING THE MILITARY

FREDERICK KRAISSL, JR., P.E.

Chairman

The Kraissl Company, Inc.

Almost anyone who wishes to consider the facts of life must admit that very high on the list of each one of us is the matter of security from foreign conquest. Our forefathers founded this country and set it up under our Constitution as a haven of Liberty without license.



CONSULTING
ENGINEER

KRAISSL ASSOCIATES

We could get along without most of the services emanating from authoritarian Washington,

D. C. except "Providing for the Common Defense." This we must do collectively and was set up as a mandatory and priority function of our government. Many of us who have made a study of this matter do not believe it is being done and are distinctly worried. This worry is not allayed when the very people who can best advise us are muzzled. It is my opinion that the treatment meted out to General Singlaub has this effect and was its intent. This is the procedure of dictators, which is abhorrent to believers in representative government. There is no question that when definite orders are given, military discipline requires that they be carried out, but a non-dictatorial administration should need and desire the best thinking of the military specialists of sufficiently adequate experience, background, status and rank before making far reaching decisions that affect our national security.

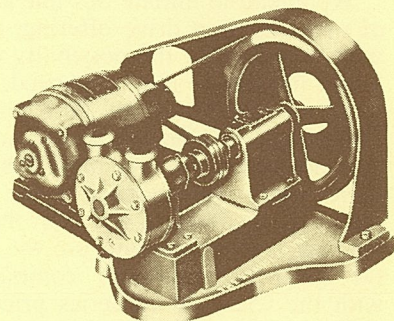
What is needed is action by Congress to regain its constitutional status in all matters relating to the common defense so that it is made very clear to any dictatorial minded administration that it does not want our military experts muzzled. It should be along the immortal quotation from Voltaire

"I may not agree with what you say, but I will fight to the death for your right to say it."

Quite frankly, this is one reason I did not apply for another Commission — after mine expired following World War II. I realized the potential threat even to a Reserve Officer of being ordered back into duty and censured for anti-administration criticism when I felt this to be in order. As a direct descendant of an officer who fought in the American Revolution, as well as others who so served, I feel that I have a responsibility to my ancestors to attempt to preserve the kind of country they fought for and accomplished, and by the voice of this publication in public affairs, you will appreciate that I am attempting to measure up to this responsibility.

If, after listening to our military experts without prejudice and without forcing them to jeopardize their careers by speaking out, we wish to go against their advice, this should be in line with Representative Government; it has happened before. Remember the Charge of the Light Brigade. Everyone in the command knew that someone had blundered, but they rode into the jaws of death and into the mouth of hell as stated by the poet. Our presidents are not generally picked for their military competence. We have had haberdashers, farmers, state governors and even an infrequent engineer. Occasionally we get a President who has the military stature of an Eisenhower, but we should not base our security on the assumption that every President is a military genius. A more recent debacle was our experience in Vietnam. It should never be forgotten that our so called Liberals got us there by our being inveigled into the policy of making the "World safe for Democracy." What we need is a policy that makes the world and the United States safe for United States Citizens. Teddy Roosevelt had a workable policy "Walk softly and carry a big stick." Let's rebuild our defenses and our military policy around this mandate, and let the world know that we will not subscribe to a policy of intimidation for this country.

OUR NEW CLASS 60-H SERIES PUMPS



Almost all of us have witnessed a gradual increase in pressures for many types of fuel oil burning systems and it has always been our motivation to meet the requirements of the industry.

As all must know our standard pressure Class 60 series has been listed by the Underwriters Laboratories for pressures up to 100 pounds psig. This, in general, should take care of fully automatic systems where these specifications control.

For pressures higher than 100 pounds psig., we have the Class 66 series, which when driven at the reduced speed of our reduction drive assemblies have met requirements for pressures up to 300 pounds psig.

It has seemed that there is a requirement for an intermediate high pressure pump for pressures up to 150 psig. Furthermore, installations requiring this characteristic are still in the highly competitive field. Consequently our decision was to extend the pressure application of the internal gear design. Almost all designers of positive displacement pumps know that the basic limitation on pressure is the load carrying capacity of the bearings. Our Class 60 series design carries as far as feasible the load carrying capacity of this design when lubricated by the oil being handled. The development work undertaken and carried to the present conclusion, requires the placement of roller bearings capable of a fifty percent increase in load carrying capacity when properly lubricated and provision made for this feature.

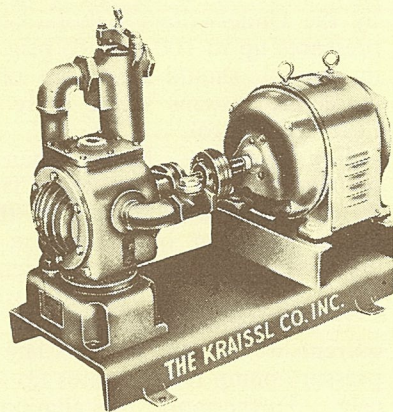
There is more to the matter than this. One of the features of our design

is our return oil mechanism, so that we are packing against air admission into the pump rather than oil leaking out which has been found desirable by our customers. This requires that the stuffing box be of spring loaded design, so that the included outboard bearing maintains an alignment function and is also properly lubricated.

The pumps are look alikes in photographs and we intend to use the same cuts. The mounting dimensions will be the same as the differences are all internal. It costs much more to build these pumps and this will be reflected in the price lists.

We intend to initiate this line as part of our reduction drive offering, as we wish to minimize the possibility of reduced life due to too high speed. Consequently the Class 60 H Reduction Drive units will be externally indistinguishable from the standard Class 60 Series except by reference to the name plate. It is possible that for the immediate present, we will use the Class 60 Series brochure in combination with the Class 60 H Series price list. We hope you will approve of our offering, and let us have some of your business when you have a need for the Intermediate Design.

LONG LASTING AIR PUMPS FOR SEWAGE EJECTOR SERVICE



While our Air Pumps have been noted for their longevity for all services to which they have been applied, we believe the following quote from a letter received February 9, 1977 will be of interest:

"Please send price and data on the Pumps to replace the two old pumps in use for twenty years, made by your company."

Upon checking the records, we found that they were supplied to the Blackburn-Smith Manufacturing Company in 1956 which corroborates the quoted remarks. Sewage Ejector Pumps call for what we call continuous intermittent service, where the air pump runs on an approximate thirty second on and thirty second off, cycle, the

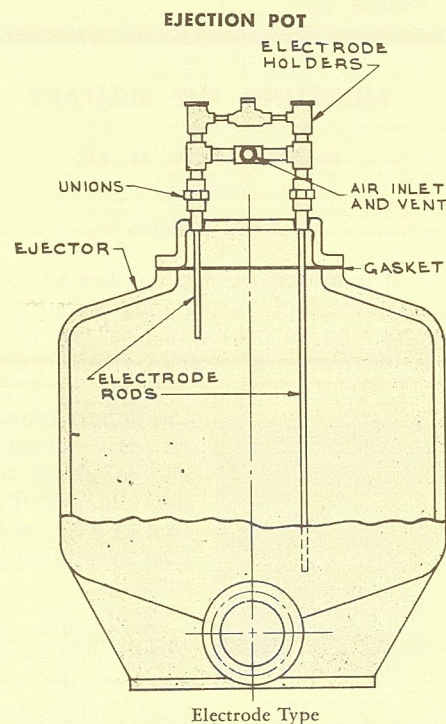
latter period allocated to filling the ejector pot by gravity. We do not approve of an installation with an intermediate air tank, and hope we have explained our reasons to the satisfaction of all concerned but are again stating them for those who wish long and comparatively service free operation, other than regular lubrication, inspection and oil addition to the oil reservoir when required. We are spot lighting these reasons as follows:

1. Tank connected pumps require that a pressure of approximately ten pounds, above operating pressure, is necessary. Many times only ten pounds is required to raise the sewage 23 feet to the sewer and this means double the pressure, which must be paid for in horse power input, which in no way contributes to energy conservation but increases the cost of the motors and controls, with reduced length of life in service. The reason is simple. When an air pump is connected to an air tank, it is almost certain that cut in and cut out controls will be used. Most of these require a differential of about ten pounds to be efficient, which obviously must be above the ejection pressure.

2. One reason for using air tanks is to permit the installation of undersized compressors, so that they are kept running during the filling cycle of the ejector operation. This increases the wear on the compressors, as they can run continuously without shut down which causes the following destructive effects. It has been found with many mechanisms, that as the machine heats up, wear becomes greater when operation is above the designed temperature. Part of this is due to reducing the thickness of the lubricating film. Part is due to differences in the coefficient of expansion of dissimilar metals, such as iron and steel. Part is due to displacement elements represented by the blades, having a decreased life at higher temperatures. It puts a greater strain on the cooling water requirements of water cooled pumps with practical elimination of fan cooled compressors of the direct connected design for this application. As temperatures go up, more of the lubricating oil will be converted into the vapor phase, causing excessive oil consumption as it is impractical to condense vaporized oil in such installations. There is no need for air tanks with our direct motor driven air pumps as they eliminate for all practical purposes, pulsations in the air supply. When air tanks are furnished they are probably built to ASME Specifications and when these are made unnecessary, the cost of installation of the suggested size air pump can usually be competitively accommodated.

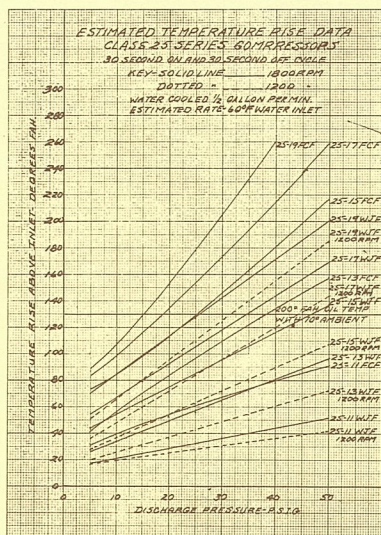
3. When air tanks are eliminated,

the air pump starts up at zero pressure, and builds up almost instantaneously to ejection pressure, but there is no sharp impact of an air pump starting up against a pressure cushion, and unloaders should be unnecessary. There is also insurance against the air pump running continuously until it seizes up due to an air leak somewhere in the line.



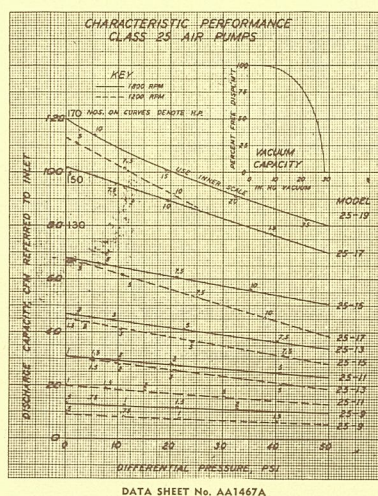
All of which brings us to our suggested means of sizing and selecting air pumps for this service. Obviously if a source of cooling water is available, the water jacketed pumps should be selected. The nearest examples are in the automotive field. Only comparatively small horsepower engines are supplied air cooled. As the horsepower increases, liquid cooling is the rule. We have given serious consideration to mounting a radiator with a circulating pump on liquid cooled pumps for higher ejection pressure and could supply this for such needs when a water supply is not available. The cooling water needed is only a very slight amount, and recirculation should be entirely practical.

Fan cooled pumps can be used on comparatively low pressure installations as indicated in the accompanying air pressure/temperature chart, when direct connected to ejector pots, and the great advantage of the liquid cooled over fan cooled units will be clear by comparison. The rule of thumb should be to never operate at a temperature as high as the boiling point of water. If this is held to approximately 180 Degrees Fahrenheit, heavy duty motor oil No. 30 Grade, will probably give good satisfaction. After this sludging may be experienced,



depending on the specification and characteristics of the oil.

While curves indicate the unit complete with Class 26 Air Filter, if the temperature can be kept down, so that no considerable amount of oil is vaporized, our "S" or standard separator units may salvage a sufficient amount of oil in the liquid phase to be entirely practical and this not only reduces the initial cost but minimizes attention since the air filters will not be present to build up back pressure due to an accumulation of a layer of dirt from the air. They operate saturated by the oil, but there is always particulate matter in the air which is accumulated on the top of the separator insert which must be occasionally removed or the unit repacked.



Sizing and selection of these units can be assisted by the use of Curve AA 1467A. This should be regarded as a direct reading empirical volumetric efficiency chart which gives the **free air displacement** at the indicated differential pressures. It is then possible to use the following simple formula which is based on the longest experience on record with our pumps:

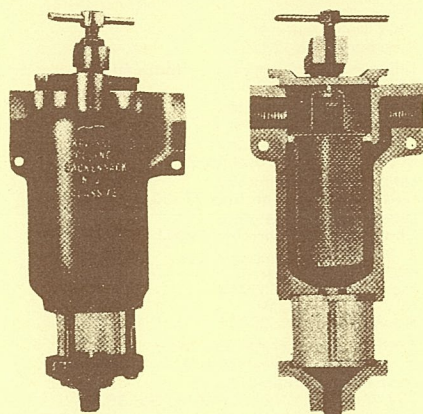
Capacity (in Gallons Per Minute) x 2

$$\frac{7.5 \text{ (Gallons per cubic foot)}}{\text{Head (PSIG Gauge) + 14.7}}$$

$$\frac{14.7 \text{ (Atmospheric)}}{.80} = \text{CMF Free Displacement}$$

Most of the parameters are from the Boyles Law Relationship with a factor of safety of 20% which takes into consideration air requirements for the oil return system from either air filter or separator. The value of cubic feet free displacement should be selected from the nearest larger value at the **PRESSURE OF OPERATION**.

CLASS 75 SEPARATORS HAVE MANY APPLICATIONS



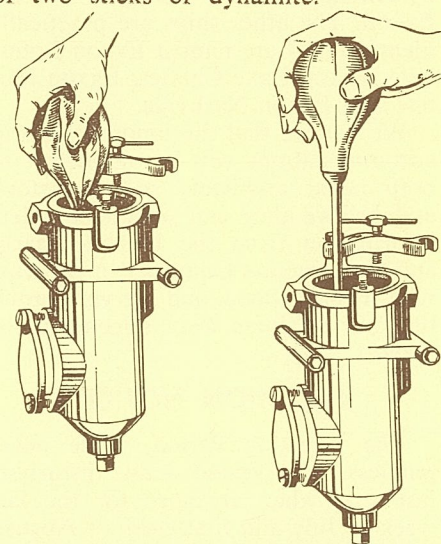
As most of our customers know the Class 75 series separators originated from a need in the Marine Field to condition fuels to preclude motor or engine stoppage or irregularity in running.

One of the worst offenders is water which can result from condensation. This can be readily explained to those who understand about humidity. The atmosphere can be likened to a huge sponge which holds water up to a certain percentage as related to atmosphere temperature. Consequently moisture vapor picked up during the warm part of the day can condense out and precipitate in gasoline tanks in the cool of the evening. Unless a tank is partially empty, this cannot occur, but who can always operate with a full gasoline or diesel oil tank, and this is a cumulative condition? The same situation can happen to shore based tanks that dispense fuel. It is not limited to large yachts or commercial vessels, as we have tested our fuel filters on small outboards with complete success.

Fuel filters have other uses. Gums and extraneous matter can be experienced. In general we have found that a satisfactory fuel can be conditioned by a 120 mesh screen with gasoline

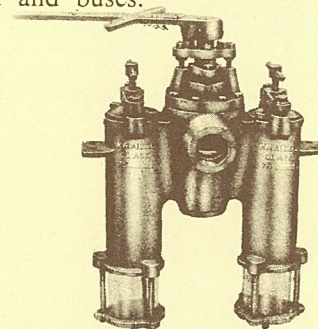
and 200 mesh with diesel oil. Any water retained is in such minute quantities to apparently have no adverse effect on performance. Furthermore these dimension screens can apparently preclude other impurities from giving trouble.

One of the features of the Class 75 series design is that separated impurities, liquid and semi-liquid, fall through the rat-trap hole and accumulate in the transparent sump, which is manufactured from heavy wall Pyrex Gauge Glass. With enclosed bilges on boats, it is preferable to lift out separated liquid impurities by use of a storage batting syringe as indicated in the drawing that serves the purpose, but depicts a former model that does not give as good visibility. The use of the storage batting syringe in closed areas minimizes spillage of gasoline into the bilge and there was a time that the vapor of two tablespoons of gasoline was likened to the explosive capability of two sticks of dynamite.



Diesel oil does not have the same explosive characteristics as gasoline and for many installations pet cocks to drain off liquid impurities can be applied and fire prevention engineers should be consulted when boats or ships are built. Even with gasoline, I had one of our duplex separators mounted on the bridge and pet cocks could have been used, but the syringe method was so easy to use and minimized the chance of a leaking pet cock.

The same application exists with trucks, large mobile excavating equipment and buses.



MV EXXON MEMPHIS HAS KRAISSL STRAINERS ABOARD



This modern tow boat delivered by the Hillman Barge and Construction Company to the Exxon Company U.S.A. will operate out of their Baton Rouge Refinery.

Hillman has stated that in this new design it has succeeded in adopting the power complexities of a larger vessel into a smaller hull.

The Exxon Memphis is the second of a new class of tow boats designed by Hillman and the second of five for Exxon. The other ships are practically identical and are named Exxon Louisville, Exxon Lake Charles, Exxon Mobile and Exxon Nashville.

We believe that the innovations and accommodations will be of interest to both naval architects and operators, and believe they can obtain complete information from the Hillman Barge and Construction Company of Brownsville, Pennsylvania, and are very proud that our strainers were selected to go aboard.

VACATION NOTICE

The Vacation Period, while never painless, was found least disturbing last year when arranged for the last week in July and first week of August. We are scheduling complete shut down during this period.

SALES REPRESENTATION

HOME OFFICE

We have reserved the areas of Connecticut, Metropolitan New York, including the Hudson Valley, Long Island, New Jersey and eastern Pennsylvania less Philadelphia District for coverage by Kraissl Company personnel.

Northeast Region

Boston-Cooper Corp.
95 Holland Street
West Somerville, Mass. 02144
Capt. C. V. Watson
Maiden Cove Lane
Cape Elizabeth, Maine 04107

Eastern Region

Filtration Unlimited
Buffalo & John Streets
Akron, N. Y. 14001
R. C. White Co.
3065 Enterprise Blvd.
Bethel Park, Pa. 15102
Gelman Industrial Equipment
1327 Barton Drive
Fort Washington, Pa. 19034
Jobe & Co., Inc.
2857 Greenmount Ave.
Baltimore, Md. 21218

Southeast Region

Power Equipment Co.
1307 West Main St.
Richmond, Va. 23201
Dillon Supply Company — Main Office
Raleigh, N. C. 27602
Dillon Supply Company
Durham, No. Carolina 27702
Dillon Supply Company
Rocky Mt., No. Carolina 27801
Dillon Supply Company
Goldsboro, No. Carolina 27530
Dillon Supply Company
Charlotte, No. Carolina 28201
Boiler Supply Company, Inc.
490 Craighead Street
Nashville, Tenn. 37204
601 Van St., N. W.
Knoxville, Tenn. 37921
Applied Engineering Co., Inc.
P. O. Box 506, Orangeburg, S. C. 29115
Spotswood Parker & Co.
721 Miami Cir. NE, Atlanta, Ga. 30324
Florida Filters, Inc.
5570 N. E. 4th Ave., Miami, Fla. 33137
Precter & Co.
Box 26158
Birmingham, Ala. 35226

North Central Region

Comb & Groves, Inc.
336 W. Eight Mile Rd.
Ferndale, Mich. 48220
Hetler Equipment Co.
P. O. Box 1904
Grand Rapids, Mich. 49501

Central Region

M. Huffman Sales Co.
42 No. Westwood
Toledo, Ohio 43607
W. G. Taylor Co.
1900 Euclid Bldg., Cleveland, Ohio 44115
The Jordan Engineering Co.
P. O. Box 30071
Cincinnati, Ohio 45230
T. A. Heidenreich Co., Inc.
2525 E. 54th Street
Indianapolis, Ind. 46220
Tobra Engineering Co.
5438 Milwaukee Ave.
Chicago, Illinois 60630
A. K. Howell Co.
2683 S. Big Bend Blvd.
St. Louis, Mo. 63143

South Central Region

Creole Engineering Co.
P. O. Box 23159, Harahan, La. 70183
Jack Tyler Engineering Co.
6112 Patterson Ave.
Little Rock, Ark. 72209
Albert Sterling & Assoc., Inc.
2611 Crocker St., Houston, Texas 77006

Northwest Region

Baxter-Rutherford Inc.
P. O. Box 24324 Terminal Annex
Seattle, Washington 98134

Western Region

Jay Besore & Assoc.
1690 Plymouth St.
Mountain View, Cal. 94043
Power Engineering Co.
364 W. North 600th St.
Salt Lake City, Utah 84110

Southwest Region

Wagner Hydraulic Equip. Co.
2089 Westwood Blvd.
Los Angeles, California 90025
Engineered Sales Co.
5150 N. 16th St., Suite A-126
Phoenix, Arizona 85016

Canada—Ontario and Quebec Provinces

Kirk Equipment Ltd.
375 Victoria Ave.
Montreal, Quebec, Canada H3Z 2N1
K. C. Hamilton Equip. Ltd. — Marine
4100 W. Hill Ave.
Montreal, Quebec, Canada

Canada—British Columbia Province

Fred McMeans & Co.
1960 Waterloo St. 103
Vancouver, B. C., Canada

Canada—Alberta Province

H. F. Clarke Limited
5220-1A Street S. E.
Calgary, Alberta, Canada

Hawaii

Foster Equipment Co.
719 Ahua St.
Honolulu, Hawaii 96803

Mexico

Ingenieria Termo Industrial, S. A.
Apartado 20-360
Mexico 20, D. F., Mexico

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