

Roberts

F I L T E R M A N U F A C T U R I N G C O M P A N Y
P. O. BOX 167 • DARBY, PENNSYLVANIA 19023 • (215) 583-3131

610

October 29, 1980

Marine Corps Base
Maintenance Dept.
Utility Division
Camp Lejeune, NC
Attn: Willard Price
Superintendent, WTP

FAX
MAY 77
5697

Subject: Our Contract #1778

Gentlemen:

Pursuant to our telecon yesterday concerning the twenty 8'0" diameter XL 600 air/water sweeps furnished in 1975, we are pleased to advise as follows.

We are enclosing a copy of our Bulletin 501.1 which describes our AW rotosweeps which utilizes brass arms in lieu of the fiberglass arms originally furnished.

The PVC air/water nozzles are no longer stocked and they would have to be made up special and the price in small lots is \$10 each.

We have approximately 30 rubber nozzle grommets left in stock. However, the mold for same is no longer available. Price is \$1.00 each.

The end nozzles are similar to our water only nozzle which we have in stock and the price for these is \$2.00 each.

The present price of a new AW sweep 8'0" long is \$820.

As an alternate, we offer to replace the present fiberglass arms on your XL 600 sweeps with IPS brass and PVC plastic arm assemblies etc. to convert to type AW Rotosweeps (delivery of the rotary joint to our shop by yourselves), price - \$410.

Terms - Refer to attached M6-8/77.

Very truly yours,

ROBERTS FILTER MANUFACTURING CO.

George H. Matsinger
George H. Matsinger

GHM/kk





**Roberts Filter
Manufacturing
Company**

Bulletin 501.1

3697

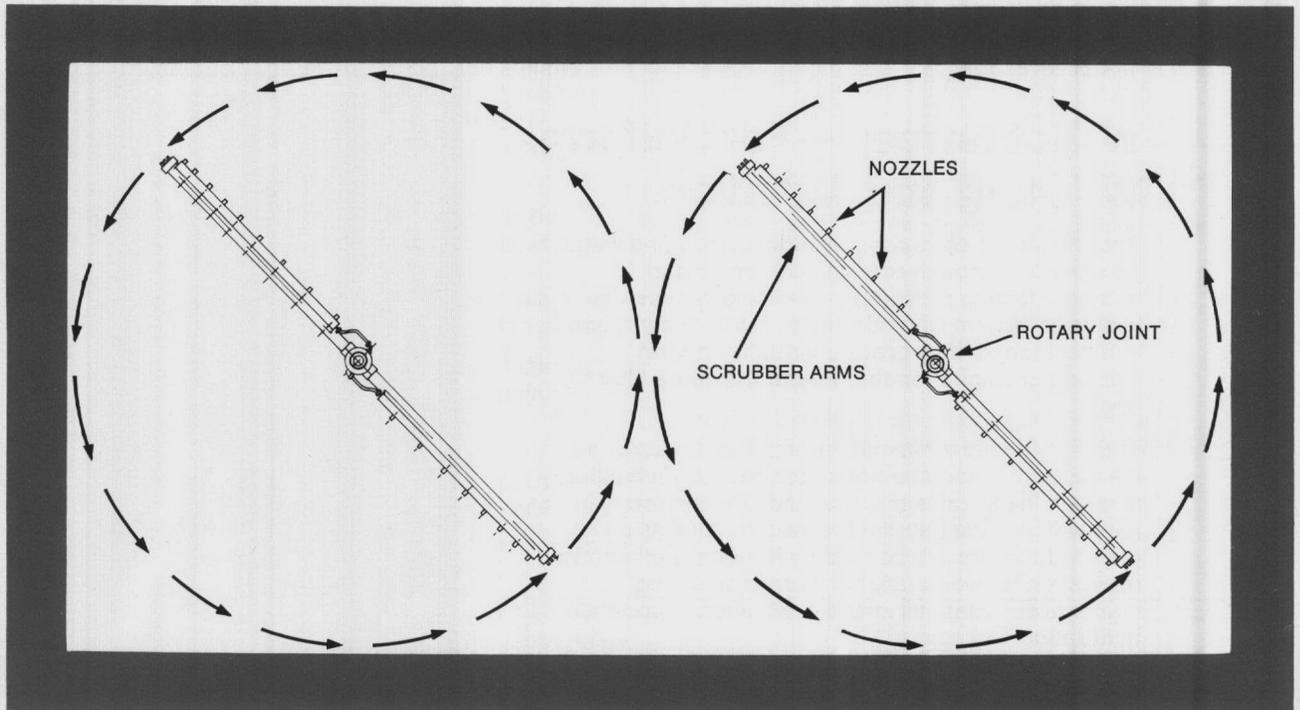
AW[®] and W[®] Roberts Rotosweeps

Rotary Washers and Agitators

AW[®]—A Superior Agitation System

- **Tremendous agitation**
Ingenious air/water jet spray dramatically increases agitation.
- **Economical**
Uses no more water or energy than conventional systems with greater cleaning action.

W[®]—For Uniform Washing and Agitation



Typical arrangement in a rectangular configuration having a ratio of 2:1.

Until Now

The continuing demand for more efficient filtration systems has led to the development of various devices and systems to extend the time required between backwash cycles.

A proliferation of methods to improve the overall effectiveness of filter backwashing have been attempted with varying degrees of success. Most, however, have been lacking either in overall cleaning efficiency, or cost effectiveness, or both.

Some of the earlier significant innovations for agitating and cleaning the filter bed surface included mechanical devices such as rotating raking systems, and water streams directed towards the surface by means of stationary nozzles.

Although both of these innovations represented significant improvements, they had limitations. While the rotating rake system proved relatively effective for circular tanks, the mechanical complexities of this system precluded its economical application for rectangular tanks. The fixed nozzle water spray systems represented a relatively passive system insofar as affording uniform agitation and cleaning action. They simply did not do the cleaning job frequently required.

Rotary Agitators – A Major Breakthrough

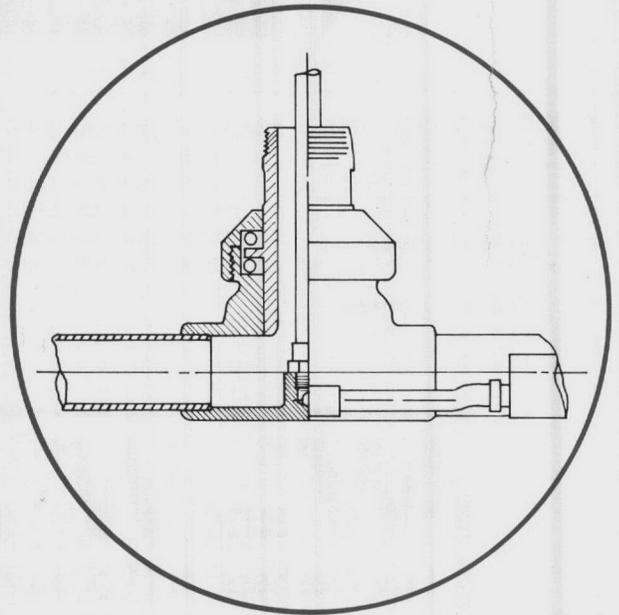
By literally sweeping the entire surface of the filter media, laterally rotating agitators produce a washing action that is vastly superior to the passive agitation produced by fixed nozzle sprays. Roberts Filter Manufacturing Company, a pioneer in the development of better filtration systems, has two superior models available.

W[®] Rotosweep – For Uniform Washing and Agitation

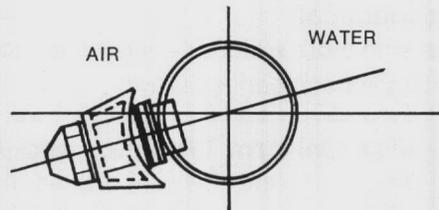
Roberts Model W[®] is a highly efficient rotating water jet agitator. Through extensive research and stringent testing procedures, we have designed a hydraulic system with nozzles so ingeniously spaced and positioned, they provide virtually uniform washing and agitation throughout the entire filter bed.

The W[®] Model's three major components comprise the supporting member, or stator, the lateral headers to which the nozzles are attached, and the rotary joint which is the heart of the system. And, as all our products are, it's backed by Roberts' well-known reputation for workmanship, care in selecting compatible materials, and over 80 years experience in filtration technology.

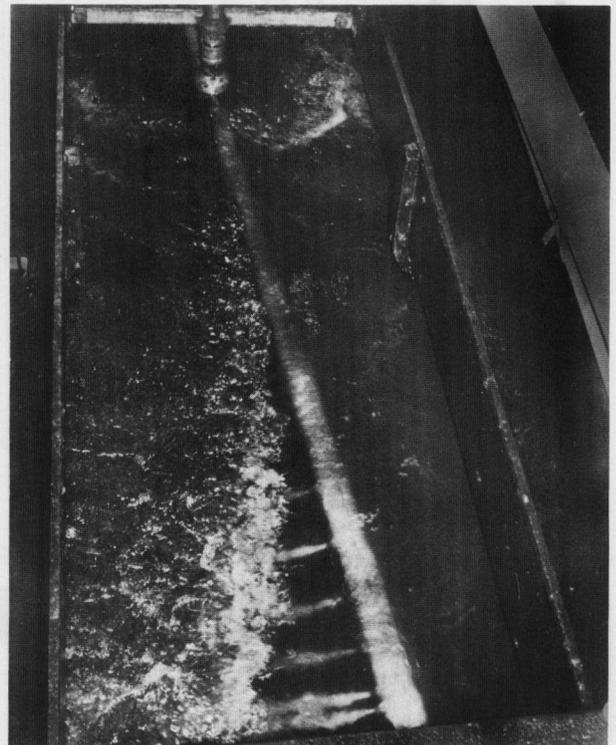
→ The AW[®] in action. Photograph was taken with the sweep arms submerging as the backwash expands the filter bed. Arms and jet sprays are unretouched to show actual effect of the dynamic air/water action.



Sectioned drawing of the rotary joint, showing stainless steel ball bearings, seals, control port for the end spray and the air suction connections.



Cross section of scrubber arm showing air and water conduits interconnected by nozzles.



AW[®] Rotosweep — Superior System

The AW[®] Rotosweep represents a major breakthrough in rotating agitator design. It incorporates all the features of the W[®] Model. But what makes our AW[®] Model totally unique is its dramatically increased agitation effectiveness achieved by combining air and water rather than using water alone.

Our patented system produces air/water jet sprays with far greater energy levels and at no higher operating costs. In spite of its vastly improved washing efficiency, it uses no more water or energy than a conventional system. The inducted air makes the difference.

Air and water are directed to the individual discharge nozzles through separate conduits. The nozzles induct atmospheric air which assures just the right air/water mixture. This not only results in a turbulent high energy level jet effect that washes and agitates the filter bed with unparalleled efficiency, but also provides the propelling force for rotating the agitator.

Roberts AW[®] Model is well suited for a variety of applications. With more stringent effluent requirements, the use of gravity filters for tertiary treatment of biologically or chemically treated wastewaters is becoming quite common. The AW[®] Model was originally developed for this use, but its advantages are equally apparent on water treatment applications.

The effluent from secondary treatment plants normally imposes a considerably higher suspended solids loading on filter beds. The solid particles usually have adhering properties that make it difficult to break the bond between these sludge particles and the filter media. Conventional rotating water agitators would require vast quantities of water at very high pressures to break this bond, and still the results may not be entirely satisfactory. On the other hand, our AW[®] Model can provide this greater scouring action with virtually no increase in energy or water consumption.

A serendipitous advantage of this system may be derived by continuously, or intermittently operating the AW[®] Model during the filtration cycle. The dissolved oxygen level of the applied water may thus be enhanced with consequent higher BOD removals.

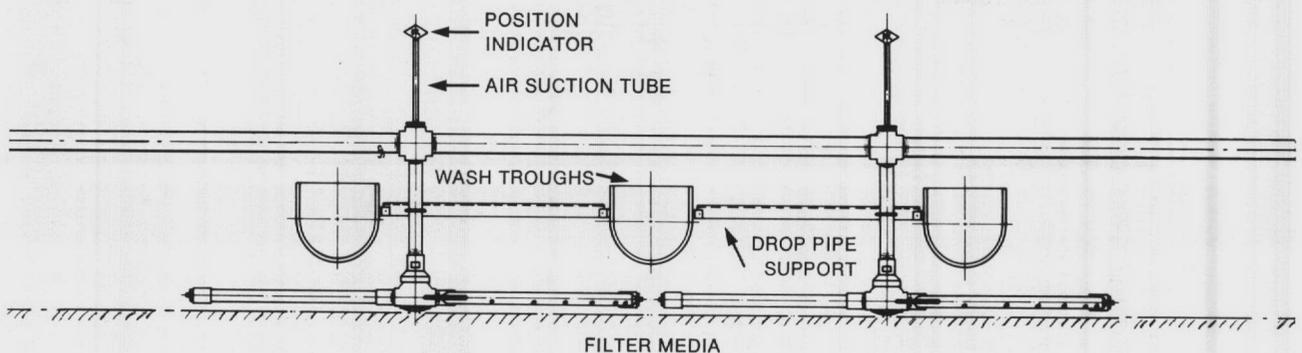
Regardless of its applications, the AW[®] has features so superior it has rendered conventional designs virtually obsolete.

**TABLE 1—WATER REQUIREMENTS
AW FLOW DATA**
METRIC EQUIVALENTS IN BLUE

AGITATOR DIA.		60 PSI (minimum)		100 PSI	
FT. - IN.	METERS	USGPM*	LIT/SEC*	USGPM*	LIT/SEC*
5'-9"	1.75	39.8	2.51	51.3	3.24
6'-0"	1.83	41.6	2.62	53.7	3.39
6'-3"	1.91	43.5	2.74	56.1	3.54
6'-6"	1.98	45.5	2.87	58.7	3.70
6'-9"	2.06	47.5	3.00	61.3	3.87
7'-0"	2.13	49.6	3.13	64.0	4.04
7'-3"	2.21	51.8	3.27	66.8	4.22
7'-6"	2.29	54.0	3.41	69.7	4.40
7'-9"	2.36	56.3	3.55	72.6	4.58
8'-0"	2.44	58.9	3.72	76.0	4.79
8'-3"	2.51	61.2	3.86	78.9	4.98
8'-6"	2.59	63.8	4.03	82.3	5.19
8'-9"	2.67	66.4	4.19	85.7	5.40
9'-0"	2.74	69.0	4.35	89.0	5.62
9'-3"	2.82	71.8	4.53	92.6	5.84
9'-6"	2.90	74.6	4.71	96.2	6.07
9'-9"	2.97	77.5	4.89	100.	6.31
10'-0"	3.05	80.5	5.08	104.	6.55
10'-3"	3.12	83.6	5.28	108.	6.80
10'-6"	3.20	86.8	5.48	112.	7.06
10'-9"	3.28	89.9	5.67	116.	7.32
11'-0"	3.35	93.1	5.87	120.	7.58
11'-3"	3.43	96.5	6.01	125.	7.86
11'-6"	3.51	100.	6.31	129.	8.14
11'-9"	3.58	104.	6.53	134.	8.42
12'-0"	3.66	107.	6.76	138.	8.72
12'-3"	3.73	111.	6.98	143.	9.01
12'-6"	3.81	114.	7.22	148.	9.31
12'-9"	3.89	118.	7.46	152.	9.62
13'-0"	3.96	119.	7.50	153.	9.64
13'-3"	4.04	120.	7.56	155.	9.77
13'-6"	4.11	122.	7.68	157.	9.89
13'-9"	4.19	124.	7.82	160.	10.1
14'-0"	4.27	126.	7.94	163.	10.3
14'-3"	4.34	128.	8.06	166.	10.5
14'-6"	4.42	130.	8.19	169.	10.7
14'-9"	4.50	132.	8.31	171.	10.8
15'-0"	4.57	134.	8.44	173.	10.9
15'-3"	4.65	136.	8.56	175.	11.0
15'-6"	4.72	138.	8.70	178.	11.2
15'-9"	4.80	140.	8.82	181.	11.4
16'-0"	4.88	142.	8.95	183.	11.5
16'-3"	4.95	144.	9.06	186.	11.7
16'-6"	5.03	146.	9.20	188.	11.9
16'-9"	5.11	147.	9.26	190.	12.0
17'-0"	5.18	148.	9.32	192.	12.1
17'-3"	5.26	150.	9.45	194.	12.2
17'-6"	5.33	152.	9.57	197.	12.4
17'-9"	5.41	155.	9.77	200.	12.6
18'-0"	5.49	158.	9.96	204.	12.9
18'-3"	5.56	161.	10.1	208.	13.1
18'-6"	5.64	164.	10.3	212.	13.3
18'-9"	5.72	167.	10.5	216.	13.6
19'-0"	5.79	170.	10.7	220.	13.9
19'-3"	5.87	173.	10.9	224.	14.1
19'-6"	5.94	177.	11.2	228.	14.4
19'-9"	6.02	181.	11.4	234.	14.7

*Water consumption—approximate maximum with end sprays in operation. Actual average consumption slightly less. Metric conversions are provided for the engineers convenience only.

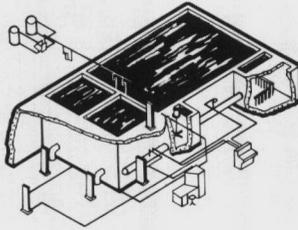
Elevation Drawing of a typical installation showing relationship of the stator supports to wash troughs.



Products and Services

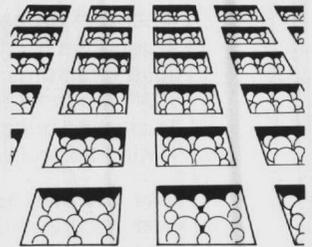
High Flow-Rate Filter Systems

Roberts Manhattan Process (RMP), an advanced water treatment system for potable and industrial water. Higher flow rates minimize capital and operating costs.



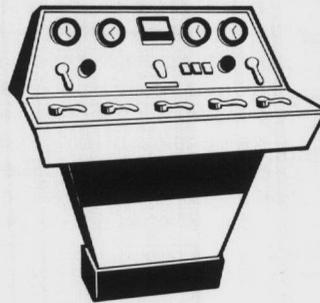
Filter Underdrain Systems

Reliable and widely accepted Wheeler Bottoms assure even distribution of backwash, with minimum head loss.



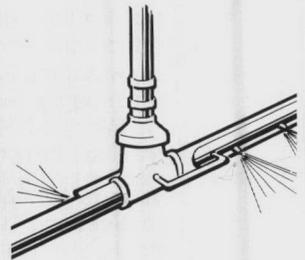
Operating Controls

Quality control centers with operating consoles utilizing hydraulic, electric, pneumatic or a combination of controls as requirements dictate.



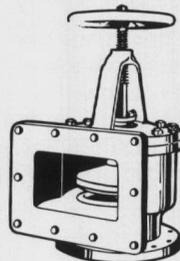
Media Washers

The AW and W are the most advanced and efficient air/water and water agitators available.



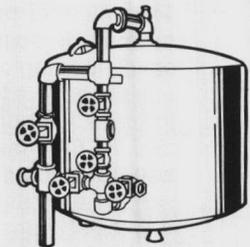
Valves and Accessories

Roberts Filter Manufacturing Company is well-known for valves designed specifically for filter plants. A complete line of wall castings is available.



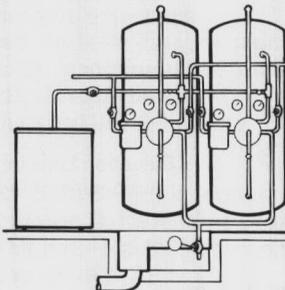
Pressure Filters

Roberts Pressure Filters are applicable to municipal and industrial water and waste-water service and are available with a wide range of media.



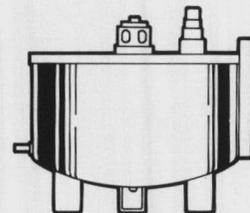
Ion Exchange Equipment

The Roberts Line includes Softeners, Iron and Manganese removal systems and two, three or mixed-bed Demineralizers; in materials and with accessories to specifications.



Chemical Feeders

Wet-type chemical feeders and slurry tanks are designed to handle a wide range of materials and rates.



Roberts Filter Manufacturing Company

6th and Columbia Avenue • Darby, Pennsylvania 19023
(215) 583-3131

Roberts Filter Company of Canada Ltd., Toronto
Roberts Filter Company of Quebec Ltd., Montreal

STANDARD TERMS & CONDITIONS OF SALE

1. QUOTATIONS

Seller may make quotations verbally or in writing. Verbal quotations which are not confirmed in writing by Seller shall expire in 5 days unless Seller receives Buyer's purchase order within that period. Written quotations, including written confirmations of verbal quotations, shall expire automatically within 30 days after the date of quotation unless Seller receives Buyer's purchase order within that period.

2. ACCEPTANCE OF PURCHASE ORDERS

Purchase orders shall be made out to Roberts Filter Mfg. Co. (herein called the Seller), Darby, Pa., and shall be, notwithstanding any contrary language of Buyer's purchase order, subject to acceptance by an authorized employee at the seller's Darby, Pa. Plant.

3. TAXES

Unless otherwise noted, prices are exclusive of any taxes, including but not limited to local, State, Provincial, Federal Sales, Use or Manufacturer's Taxes or Customs and Duties of any sort; and such are to be borne by the Buyer.

4. CREDIT AND PAYMENT

- (a) In the United States and Canada, payment terms are net thirty (30) days from date of shipment or, if delivery is delayed by an act of Buyer, thirty (30) days from date material is ready for shipment.
- (b) If Buyer is located outside those areas in 4(a) special terms may be available.
- (c) Any amounts not paid promptly when due shall incur a service charge of 1½% per month (18% per annum) until delinquency is corrected.
- (d) All credit and terms of payment are subject to approval of the Sellers Credit Department.
- (e) Buyer will be invoiced and make payment, according to the above terms, for partial shipments.

5. SHIPMENTS

- (a) Statements as to the expected dates of shipment represent Seller's best judgment, but shipment on those dates is not guaranteed.
- (b) Seller shall not be held responsible for delays due to reasons beyond his control, including but not limited to acts of God, casualty, civil disturbance, labor disputes, transportation or supply difficulties, any interruption of our facilities or act of any Governmental authority.
- (c) Costs for demurrage, cartage, and unloading material between points of delivery by carrier and jobsite are borne by Buyer.
- (d) On shipments F.O.B. Seller's Plant or point of manufacture, it is the Buyer's responsibility to inspect and accept materials and enter and prosecute any claim for loss or damage during shipment.

6. WARRANTY

- (a) If it is established, within one year after delivery to the jobsite, that any material or workmanship was defective at time of shipment Seller will, at Seller's option, repair or furnish such parts. It is expressly understood that Seller's liability is limited to the repair or furnishing of such parts and that Seller will not be liable for any special, indirect or consequential damages, losses or expenses arising in connection with the use or inability to use Seller's equipment for any purpose.
- (b) No backcharges will be allowed without prior written approval of the Seller.

7. FIELD SERVICE

Unless otherwise noted in the quotation, the services of a serviceman or field engineer are not included in the quoted price. Service is available at current per diem rates plus all travel and living expenses.

8. PATENTS

Seller will furnish a patent indemnification agreement, if required, when requested by the Buyer.

9. CANCELLATION

Deferrment or cancellation of order by Buyer will be accepted only on prior written agreement by and reimbursement to Seller for incurred expenses.

