ROTH PUMP COMPANY

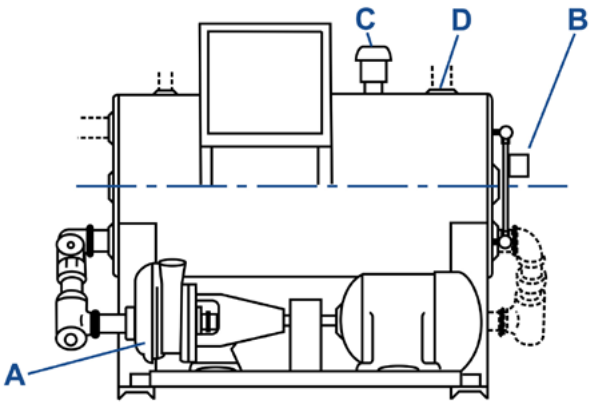
BULLETIN C204-1R5

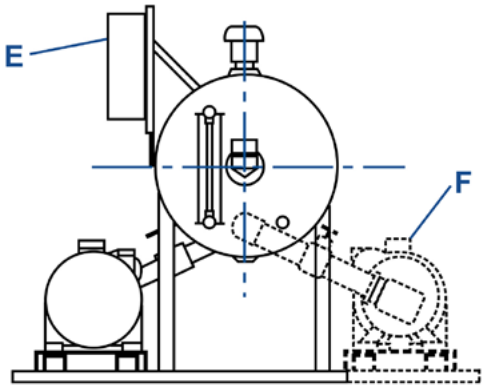
212°F CONDENSATE STATIONS

Assure full capacity return to boiler of steam condensate under open trap, boiling water conditions. Low silhouette assembly permits full drainage of low return lines. All units equipped with Roth patented pumps guaranteed to deliver full rated capacity at one foot NPSH. All pumps are full ball bearing design without internal water lubricated bearings. Capacities to 190 GPM and heads to 175 ft. TDH at 1750 RPM.

ROTH PUMP COMPANY TOLL FREE 1-888-444-ROTH

www.rothpump.com





(A) Roth patented one foot NPSH pump guaranteed to pump boiling water with only one foot suction head in capacities up to 190 GPM. Liquid end and mechanical end are separated by a mechanical seal. Shaft is supported by two ball bearings. No water lubricated bearings required.

(B) Mechanical alternator on duplex or float switch on simplex unit can be set for 4 to 14 inches travel. Starts pump at high water level. Stops pump at low water level.

(C) Roth patented drain vent provides small tell-tale steam jet when water reaches boiling point. Continued heat increase causes drain to atmosphere.

(D) Full normal vent to atmosphere required on all 212°F condensate stations.

(E) All 212°F stations wired between starter and motor unless specified otherwise. Two starters for duplex units mounted in a common panel enclosure.

(F) Duplex pump mounted and piped when specified.

ROTH 212°F CONDENSATE STATIONS BOILING WATER CAPABILITY

The purpose of this group of Roth condensate stations is to provide the heating engineer with return pumping equipment capable of handling water at boiling point. Roth 212°F condensate stations are all equipped with Roth patented one foot NPSH pumps.

All these pumps will handle boiling water, developing almost the same capacity and head as when pumping cold water. This characteristic remains constant during the entire operating life of the pump.

The use of pumps with this capability assures the engineer of uninterrupted pump performance in situations when an open steam trap allows enough return of steam with the condensate to bring the water temperature in the receiver to a rolling boil.

RECEIVERS

All 212°F condensate stations are equipped with horizontal receivers mounted at low level and are provided with a Roth safety vapor release. The function of the safety vapor release is to counteract an over pressurization of steam in the receiver in a situation where the primary vent is blocked and the water temperature rises above 212°F. All receivers are made of 3/16 inch thick steel, have flat ends and automatic quality welding. 304SS receivers are available on special applications.

LOW RETURN PIPING

The low profile vessel mounting permits return lines draining to the receiver at very low level.

Careful attention has been given to the sizing relationship between receiver, pump, motor, and float switch.

The inherent long life and stable high temperature performance of the Roth one foot NPSH pumps have made practical pump sizing on a two to one basis. All pump capacities are at least twice the stated condensation rate to permit of handling peak returns at cold start up, and to provide at least fifty percent off-time in each cycle during normal load.

All Roth condensate, collection, and transfer stations operate as independent units in the steam system. No separate switch gear or controls are necessary to their proper function. In simplex units, a float switch in the receiver closes and starts the pump motor whenever the condensate dumped by the traps reaches a specified high level in the receiver. The float switch opens and stops the motor when the condensate has been pumped down to a specified low level.

Duplex units are equipped with a float controlled mechanical alternator instead of two separate float switches unless specified otherwise. The alternator, contains a simple mechanical linkage that starts each pump motor alternately and also starts the second motor in the event the condensate level continues to rise in the receiver after the first pump is in operation. The mechanical alternator thus assures both alternation to keep both pumps functional and standby protection to handle massive surges of condensate returns from the heating system.

A magnetic starter to carry line voltage to each pump is required for all three phase motors and for all single phase motors 3/4 HP and larger. Single phase motors ½ HP and smaller can be started across the line by a float switch or mechanical alternator.

Wiring between pump and motor, including mounting of magnetic starters, is included on all Roth 212°F condensate stations. Duplex units are equipped with two starters mounted in a common enclosure. All starters are in an accessible location at waist height spaced far enough from the vessel to permit insulation.

SELECTION TABLES

Cond. Rate	Pump Disch. Pressure	Min. Pump GPM	Unit Number	Min. NPSH Feet	Actual Pump GPM	Motor H.P.	Motor RPM	Pump Disch.	Rec. Cap. Gal.
Up to 4000 Sq. Ft. EDR 1000 Lb/Hr 2.0 GPM	10	4.0	UB00250	1	4.3	1/3	1750	1 1/4	20
	15	4.0	UB00250	1	4.2	1/3	1750	1 1/4	20
	20	4.0	UB00430	1	4.7	1/3	1750	1 1/4	20
	30	4.0	UB00430	1	4.2	1/3	1750	1 1/4	20
	40	4.0	UB00350	1	4.7	1/2	1750	1 1/4	20
	50	4.0	UB00450	1	4.0	1/2	1750	1 1/4	20
	60	4.0	UB00460	1	4.5	3/4	1750	1 1/4	20
	75	4.0	UB00675	1	7.2	1	1750	1 1/4	20
6000 Sq. Ft. EDR 1500 Lb/Hr 3.0 GPM	10	6.0	UB00620	1	7.7	1/3	1750	1 1/4	20
	15	6.0	UB00620	1	7.2	1/3	1750	1 1/4	20
	20	6.0	UB00620	1	6.5	1/3	1750	1 1/4	20
	30	6.0	UB00630	1	6.2	1/3	1750	1 1/4	20
	40	6.0	UB00640	1	7.0	1/2	1750	1 1/4	20
	50	6.0	UB00650	1	7.0	3/4	1750	1 1/4	20
	60	6.0	UB00675	1	8.6	1	1750	1 1/4	20
	75	6.0	UB00875	1	7.2	1	1750	1 1/4	20
8000 Sq. Ft. EDR 2000 Lb/Hr 4.0 GPM	10	8.0	UB00630	1	8.5	1/3	1750	1 1/4	20
	15	8.0	UB00630	1	8.0	1/3	1750	1 1/4	20
	20	8.0	UB00620	1	9.2	1/3	1750	1 1/4	20
	30	8.0	UB00640	1	8.2	1/2	1750	1 1/4	20
	40	8.0	UB00640	1	8.6	1/2	1750	1 1/4	20
	50	8.0	UB00675	1	9.8	1	1750	1 1/4	20
	60	8.0	UB00675	1	8.6	1	1750	1 1/4	20
	75	8.0	UB00675	1	9.2	1 1/2	1750	1 1/4	20
10,000 Sq. Ft. EDR 2500 Lb/Hr 5.0 GPM	10	10.0	UB00820	1	10.8	1/3	1750	1 1/4	20
	15	10.0	UB00820	1	10.1	1/3	1750	1 1/4	20
	20	10.0	UB00840	1	12.0	1/2	1750	1 1/4	20
	30	10.0	UB00840	1	10.3	1/2	1750	1 1/4	20
	40	10.0	UB01040	1	10.9	3/4	1750	1 1/4	20
	50	10.0	UB01050	1	11.5	1	1750	1 1/4	20
	60	10.0	UB01260	1	14.8	1 1/2	1750	1 1/4	20
	75	10.0	UB01075	1	11.6	1 1/2	1750	1 1/4	20
12,000 Sq. Ft. EDR 3000 Lb/Hr 6.0 GPM	10	12.0	UB01210	1	14.2	1/3	1750	1 1/4	20
	15	12.0	UB00840	1	13.3	1/2	1750	1 1/4	20
	20	12.0	UB00840	1	12.0	1/2	1750	1 1/4	20
	30	12.0	UB01040	1	12.1	3/4	1750	1 1/4	20
	40	12.0	UB01240	1	13.4	3/4	1750	1 1/4	20
	50	12.0	UB01250	1	12.8	1 1/2	1750	1 1/4	20
	60	12.0	UB01260	1	14.8	1 1/2	1750	1 1/4	20
	75	12.0	UB01275	1	12.3	2	1750	1 1/4	20
15,000 Sq. Ft. EDR 3750 Lb/Hr 7.5 GPM	10	15.0	UC01510	1	15.2	1/3	1750	1 1/4	35
	15	15.0	UC01520	1	18.4	1/2	1750	1 1/4	35
	20	15.0	UC01520	1	17.1	1/2	1750	1 1/4	35
	30	15.0	UC01530	1	18.1	3/4	1750	1 1/4	35
	40	15.0	UC01540	1	15.0	1	1750	1 1/4	35
	50	15.0	UC01550	1	18.0	1 1/2	1750	1 1/4	35
	60	15.0	UC01560	1	17.5	2	1750	1 1/4	35
	75	15.0	UC01575	1	20.2	3	1750	2	35
20,000 Sq. Ft. EDR 5000 Lb/Hr 10.0 GPM	10	20.0	UC02010	1	24.5	1/2	1750	1 1/4	35
	15	20.0	UC01530	1	23.1	3/4	1750	1 1/4	35
	20	20.0	UC01530	1	21.0	3/4	1750	1 1/4	35
	30	20.0	UC02030	1	21.3	1	1750	1 1/4	35
	40	20.0	UC02040	1	22.0	1 1/2	1750	1 1/4	35
	50	20.0	UC01560	1	22.0	2	1750	1 1/4	35
	60	20.0	UC02060	1	26.0	3	1750	1 1/4	35
	75	20.0	UC01575	1	20.2	3	1750	2	35
25,000 Sq. Ft. EDR 6250 Lb/Hr 12.5 GPM	10	25.0	UC02515	1	28.0	3/4	1750	1 1/4	35
	15	25.0	UC02515	1	26.9	3/4	1750	1 1/4	35
	20	25.0	UC02520	1	31.6	1	1750	1 1/4	35
	30	25.0	UC02040	1	27.0	1 1/2	1750	1 1/4	35
	40	25.0	UC02540	1	25.1	1 1/2	1750	1 1/4	35
	50	25.0	UC02060	1	29.2	3	1750	1 1/4	35
	60	25.0	UC02060	1	26.0	3	1750	1 1/4	35
	75	25.0	UC02075	1	27.7	5	1750	2	35
30,000 Sq. Ft. EDR 7500 Lb/Hr 15.0 GPM	10	30.0	UE03510	1	35.4	3/4	1750	1 1/4	60
	15	30.0	UE03020	1	34.0	1	1750	1 1/4	60
	20	30.0	UE03020	1	31.6	1	1750	1 1/4	60
	30	30.0	UE03030	1	35.0	2	1750	1 1/4	60
	40	30.0	UE03040	1	32.5	3	1750	1 1/4	60
	50	30.0	UE03060	1	35.5	3	1750	2	60
	60	30.0	UE03060	1	32.0	3	1750	2	60
	75	30.0	UE03575	1	36.5	5	1750	2	60
35,000 Sq. Ft. EDR 8750 Lb/Hr 17.5 GPM	10	35.0	UE03510	1	35.4	3/4	1750	1 1/4	60
	15	35.0	UE03520	1	39.0	1 1/2	1750	1 1/4	60
	20	35.0	UE03520	1	38.9	1 1/2	1750	1 1/4	60
	30	35.0	UE03530	1	35.0	2	1750	1 1/4	60
	40	35.0	UE03060	1	38.5	3	1750	2	60
	50	35.0	UE03060	1	35.5	3	1750	2	60
	60	35.0	UE03575	1	43.0	5	1750	2	60
	75	35.0	UE03575	1	36.5	5	1750	2	60
40,000 Sq. Ft. EDR 10,000 Lb/Hr 20.0 GPM	10	40.0	UF04010	1	40.0	1 1/2	1750	1 1/4	100
	15	40.0	UF04015	1	43.5	1 1/2	1750	2	100
	20	40.0	UF04030	1	47.0	2	1750	2	100
	30	40.0	UF04030	1	44.0	2	1750	2	100
	40	40.0	UF05040	1	51.0	3	1750	2	100
	50	40.0	UF04060	1	44.0	5	1750	2	100
	60	40.0	UF04060	1	43.0	5	1750	2	100
	75	40.0	UF04075	1	44.0	5	1750	2	100

Cond. Rate	Pump Disch. Pressure	Min. Pump GPM	Unit Number	Min. NPSH Feet	Actual Pump GPM	Motor H.P.	Motor RPM	Pump Disch.	Rec. Cap. Gal.
Up to 50,000 Sq. Ft. EDR 12,500 Lb/Hr 25.0 GPM	10	50.0	UF05010	1	51.0	1 1/2	1750	2	100
	15	50.0	UF06015	1	59.0	2	1750	2	180
	20	50.0	UF06020	1	60.1	2	1750	2	100
	30	50.0	UF05040	1	55.0	3	1750	2	100
	40	50.0	UF05040	1	51.0	3	1750	2	100
	50	50.0	UF05050	1	52.0	5	1750	2	100
	60	50.0	UF05075	1	63.0	7 1/2	1750	2	100
	75	50.0	UF05075	1	51.0	7 1/2	1750	2	100
60,000 Sq. Ft. EDR 15,000 Lb/Hr 30.0 GPM	10	60.0	UF06015	1	63.7	2	1750	2	100
	15	60.0	UF06015	1	61.5	2	1750	2	100
	20	60.0	UF06020	1	60.1	2	1750	2	100
	30	60.0	UF06030	1	68.0	3	1750	2	100
	40	60.0	UF06040	1	78.0	5	1750	2	100
	50	60.0	UF05075	1	72.0	7 1/2	1750	2	100
	60	60.0	UF05075	1	63.0	7 1/2	1750	2	100
	75	60.0	UF06075	1	74.8	10	1750	3F	100
70,000 Sq. Ft. EDR 17,500 Lb/Hr 35.0 GPM	10	70.0	UG07020	1	77.5	3	1750	2	180
	15	70.0	UG07020	1	77.5	3	1750	2	180
	20	70.0	UG07020	1	77.5	3	1750	2	180
	30	70.0	UG07050	1	88.0	5	1750	2	180
	40	70.0	UG07050	1	78.0	5	1750	2	180
	50	70.0	UG07050	1	72.0	5	1750	2	180
	60	70.0	UG07075	1	79.0	10	1750	3F	180
	75	70.0	UG07075	1	74.0	10	1750	3F	180
80,000 Sq. Ft. EDR 20,000 Lb/Hr 40.0 GPM	10	80.0	UG08020	1	86.0	3	1750	2	180
	15	80.0	UG08020	1	86.0	3	1750	2	180
	20	80.0	UG08020	1	86.0	3	1750	2	180
	30	80.0	UG07050	1	88.0	7	1750	2	180
	40	80.0	UG08040	1	90.0	7 1/2	1750	3F	180
	50	80.0	UG08050	1	90.0	7 1/2	1750	3F	180
	60	80.0	UG07075	1	80.0	10	1750	3F	180
	75	80.0	UG09075	1	83.0	15	1750	3F	180
90,000 Sq. Ft. EDR 22,500 Lb/Hr 45.0 GPM	10	90.0	UG10020	1	117.0	5	1750	3F	180
	15	90.0	UG10020	1	109.0	5	1750	3F	180
	20	90.0	UG10020	1	105.0	5	1750	3F	180
	30	90.0	UG08050	1	98.0	7 1/2	1750	3F	180
	40	90.0	UG08050	1	95.0	7 1/2	1750	3F	180
	50	90.0	UG09060	1	106.0	10	1750	3F	180
	60	90.0	UG09060	1	103.0	10	1750	3F	180
	75	90.0	UG09075	1	93.0	15	1750	3F	180
100,000 Sq. Ft. EDR 25,000 Lb/Hr 50.0 GPM	10	100.0	UG10020	1	117.0	5	1750	3F	180
	15	100.0	UG10020	1	107.0	5	1750	3F	180
	20	100.0	UG10020	1	104.0	5	1750	3F	180
	30	100.0	UG08050	1	100.0	5	1750	3F	180
	40	100.0	UG09060	1	114.0	10	1750	3F	180
	50	100.0	UG09060	1	106.5	10	1750	3F	180
	60	100.0	UG09060	1	132.5	15	1750	3F	180
	75	100.0	UG10075	1	120.0	15	1750	3F	180
110,000 Sq. Ft. EDR 27,500 Lb/Hr 55.0 GPM	10	110.0	UG10020	1	117.0	5	1750	3F	180
	15	110.0	UG12020	1	140.8	7 1/2	1750	3F	180
	20	110.0	UG12020	1	134.0	7 1/2	1750	3F	180
	30	110.0	UG10020	1	124.0	10	1750	3F	180
	40	110.0	UG09060	1	114.0	10	1750	3F	180
	50	110.0	UG12060	1	142.0	15	1750	3F	180
	60	110.0	UG12060	1	132.5	15	1750	3F	180
	75	110.0	UG12075	1	132.0	20	1750	3F	180
120,000 Sq. Ft. EDR 30,000 Lb/Hr 60.0 GPM	10	120.0	UG12020	1	146.0	7 1/2	1750	3F	180
	15	120.0	UG12020	1	140.8	7 1/2	1750	3F	180
	20	120.0	UG12020	1	134.0	7 1/2	1750	3F	180
	30	120.0	UG09060	1	124.0	10	1750	3F	180
	40	120.0	UG12040	1	150.0	10	1750	3F	180
	50	120.0	UG12060	1	142.0	15	1750	3F	180
	60	120.0	UG12060	1	132.5	15	1750	3F	180
	75	120.0	UG12075	1	132.0	20	1750	3F	180
130,000 Sq. Ft. EDR 32,500 Lb/Hr 65.0 GPM	10	130.0	UH13020	1	146.0	7 1/2	1750	3F	250
	15	130.0	UH13020	1	140.8	7 1/2	1750	3F	250
	20	130.0	UH13020	1	134.0	7 1/2	1750	3F	250
	30	130.0	UH15040	1	160.0	10	1750	3F	250
	40	130.0	UH15040	1	150.0	10	1750	3F	250
	50	130.0	UH13060	1	142.0	15	1750	3F	250
	60	130.0	UH13060	1	132.5	15	1750	3F	250
	75	130.0	UH13075	1	132.0	20	1750	3F	250
140,000 Sq. Ft. EDR 35,500 Lb/Hr 70.0 GPM	10	140.0	UH13020	1	146.0	7 1/2	1750	3F	250
	15	140.0	UH13020	1	140.8	7 1/2	1750	3F	250
	20	140.0	UH15040	1	173.0	10	1750	3F	250
	30	140.0	UH15040	1	160.0	10	1750	3F	250
	40	140.0	UH15040	1	150.0	10	1750	3F	250
	50	140.0	UH13060	1	142.0	15	1750	3F	250
	60	140.0	UH15060	1	151.0	15	1750	3F	250
	75	140.0	ON APPLICATION						
150,000 Sq. Ft. EDR 37,500 Lb/Hr 75.0 GPM	10	150.0	UH15010	1	177.0	7 1/2	1750	3F	350
	15	150.0	UH15040	1	175.0	10	1750	3F	350
	20	150.0	UH15040	1	173.0	10	1750	3F	350
	30	150.0	UH15040	1	160.0	10	1750	3F	350
	40	150.0	UH15040	1	150.0	10	1750	3F	350
	50	150.0	UH15060	1	166.0	15	1750	3F	350
	60	150.0	UH15060	1	151.0	15	1750	3F	350
	75	150.0	ON APPLICATION						

SAMPLE SPECIFICATION

Furnish and install as shown on drawings Roth (duplex-simplex) 212°F condensate station.
Unit shall be Roth Model _____ suitable for sq. ft. EDR at _____ PSI discharge pressure when pumping 212°F condensate.

Unit shall be furnished as a factory package unit and shall include the following components:

1. Two (one for simplex) Roth one foot NPSH pumps certified by the manufacturer to deliver GPM capacity at PSI without capacity loss when pumping 212°F condensate with 1 ft. NPSH.

Pumps shall be Roth one foot NPSH design or equal, shall operate at 1750 RPM, be of standard fitted construction, and shall be equipped with one mechanical shaft seal suitable for operation in 212°F water. Pumps shall be constructed so that shaft and impeller are entirely supported by grease lubricated sealed ball bearings.

Pumps shall be guaranteed by the manufacturer for one year against defects in material and workmanship.

2. One low-profile steel receiver of _____gallon capacity with steel channel bolt-on legs. Receiver shall be of 3/16" steel construction with flat flanged heads and shall be fitted with openings for inlet, outlet, vent, overflow, gauge glass, thermometer, and drain. Low profile receiver shall be mounted at a height to provide one foot average suction head.

3. Provide Roth drain vent assembly to allow drain of overflow if condensate temperature exceeds 212°F.

4. Provide pressure gauges complete with siphon and cock mounted in the pump discharge.

5. Provide gauge glass and thermometer mounted in the receiver.

6. Provide all piping between receiver outlet and pump suction complete with self cleaning "L" type strainers with flanged blow-off outlet and gate valves. Pipe, strainers, and valves must be sized for less than 3 ft/second velocity liquid flow at maximum pump capacity and specified operating head.

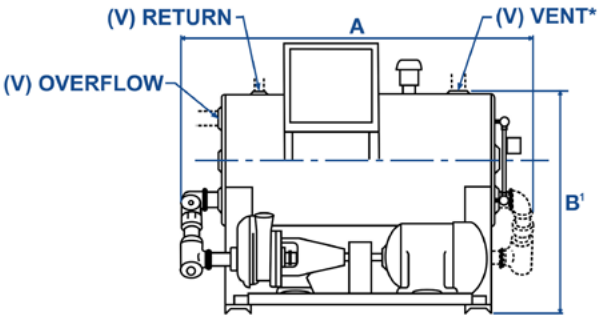
7. (For duplex) Provide mechanical alternator to start first one pump and then the other and arranged in such a manner as to automatically start the second pump if the first pump cannot handle peak returns.

7. (For simplex) Provide automatic float switch to control pump. Float switch contacts shall close on rise in water level and shall be actuated by stainless steel float and float rod.

8. Two (one for simplex) 1750 RPM drip proof motors of characteristics shown on schedule. Motors to be flexible coupled to pumps and mounted on a common base plate. Motors shall not be loaded beyond a service factor of 1.0 for the motor nameplate horsepower rating when operating at specified discharge pressure or below.

9. Provide two (one for simplex) three pole, three phase across the line magnetic starters with (3) overload heaters, hand-off-automatic (HOA) selector switch panel mounted in a single NEMA 1 enclosure and wired to the motors.

10. All of the above to be furnished as a complete package unit, factory assembled, piped, and wired and ready for connection to services at the building.



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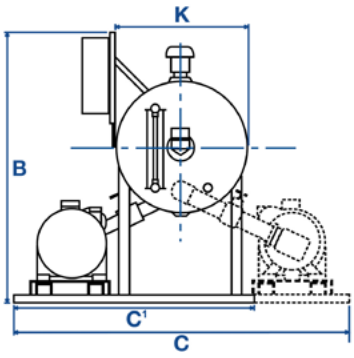

** Connect unobstructed full size vent to atmosphere. Do not valve or plug.*

Receiver Capacity Gallons	SIMPLEX					
	A	B	B¹	C¹	K	V
20	45	44	24	32	16	1 1/2
35	50	51	33	32	18	2
60	58	51	37	37	22 1/2	2 1/2
100	60	53	38	48	27	3
180	88	51	38	48	30	4
250	88	56	45	54	36	4

Receiver Capacity Gallons	DUPLEX					
	A	B	B¹	C	K	V
20	45	44	24	43	16	1 1/2
35	50	51	33	43	18	2
60	58	51	37	51	22 1/2	2 1/2
100	64	53	38	65	27	3
180	94	51	38	65	30	4
250	94	56	45	87	36	4

Contact your Roth Representative Today!

ROTH PUMP COMPANY

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