

GRAPHILOR®

www.serviceprocess.net

Service Process Equipment, Inc.

Mike Sellers
Sales Representative

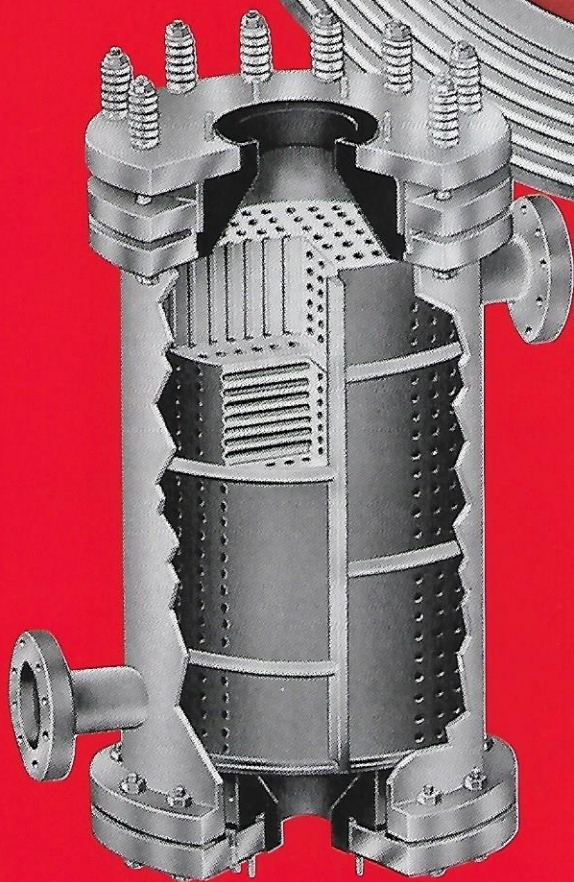
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GRAPHILOR®

CYLINDRICAL BLOCK HEAT EXCHANGERS

CARBONE OF AMERICA



**GROUPE
CARBONE LORRAINE**

COIL SPRINGS MAINTAIN
AXIAL FORCE ON HEAT
EXCHANGER ASSEMBLY
DURING OPERATIONAL
TEMPERATURE CHANGES

FLOATING END COMPEN-
SATES FOR DIFFERENTIAL
EXPANSION BETWEEN
GRAPHITE CORE AND
STEEL SHELL

DRILLED AXIAL PROCESS
HOLES (3 DIAMETERS
AVAILABLE)

DRILLED TRANSVERSE
SERVICE HOLES

FIXED END

VERTICAL SERVICE FLUID DRAIN
(VENT & DRAIN ARE ON SHELL
FOR HORIZONTAL OPERATION)

STAINLESS STEEL
LONGITUDINAL GUIDE BARS
AND SERVICE BAFFLE

ARMORED FLOATING HEAD
ASSEMBLY (1 PIECE
GRAPHITE AND STEEL)

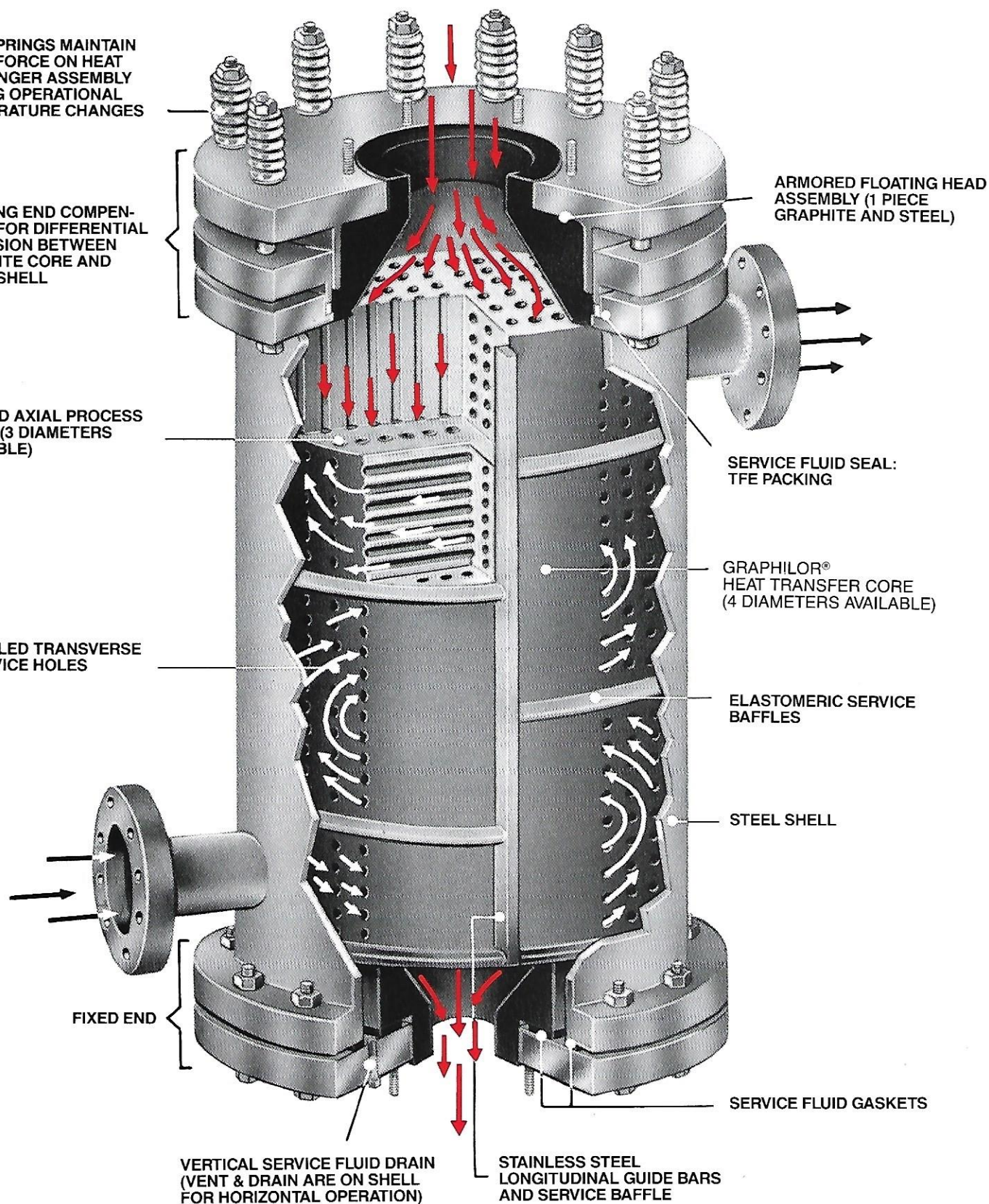
SERVICE FLUID SEAL:
TFE PACKING

GRAPHILOR®
HEAT TRANSFER CORE
(4 DIAMETERS AVAILABLE)

ELASTOMERIC SERVICE
BAFFLES

STEEL SHELL

SERVICE FLUID GASKETS



GRAPHILOR® CYLINDRICAL BLOCK HEAT EXCHANGER

The cylindrical block (or cylinder), heat exchanger is the most versatile of the various graphite designs in that it is best suited for a wide variety of applications.

Because graphite is inherently weak in tension and strong in compression, the cylinder heat exchanger, with its axial spring compression principle, accommodates higher design pressures.

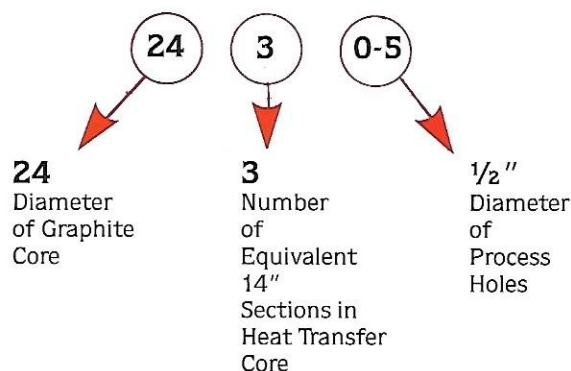
IMPORTANT FEATURES ARE:

- Solid drilled construction in multiples of 14" long sections; or, single monolithic cores without cemented joints, up to 70" in length.
- Excellent corrosion resistance to a wide variety of chemicals (see separate corrosion resistance guide).
- ASME code construction (lethal designation available).
- No exposed graphite.
- Alternating rows of **process** and **service** holes for maximum heat transfer.
- Design temperature of 360°F. Can be exceeded for certain applications with water cooled heads.
- Compressed TFE gaskets between sections.
- Horizontal or vertical supports.

- Nozzle sizes are provided to suit the application.
- Installation, maintenance and operating instructions are available — request Form No. 6.

EXPLANATION OF TYPICAL MODEL NUMBER

2430-5



SERIES 100

3/8" PROCESS HOLES × 3/8" SERVICE HOLES

SERIES 100

1/2" PROCESS HOLES × 3/8" SERVICE HOLES

MODEL NO.	PROCESS - HTA - Heat Transfer Area (Ft ²)	PROCESS - CSA - Cross Sectional Area (Ft ²)	No. of Process Holes	SERVICE - HTA - Heat Transfer Area (Ft ²)	SERVICE - CSA - Cross Sectional Area (Ft ²)	No. of Service Holes
1210-38	19	0.125	164	21	0.168	220
1220-38	38	0.125	164	43	0.337	440
1230-38	56	0.125	164	64	0.506	660
1240-38	75	0.125	164	86	0.674	880
1250-38	94	0.125	164	107	0.843	1100
1260-38	113	0.125	164	128	1.012	1320
1270-38	131	0.125	164	150	1.181	1540
1610-38	37	0.246	321	39	0.230	300
1620-38	74	0.246	321	78	0.460	600
1630-38	110	0.246	321	117	0.690	900
1640-38	147	0.246	321	156	0.920	1200
1650-38	184	0.246	321	195	1.150	1500
1660-38	227	0.246	321	234	1.380	1800
1670-38	257	0.246	321	272	1.610	2100
2410-38	91	0.607	791	89	0.383	500
2420-38	181	0.607	791	178	0.767	1000
2430-38	272	0.607	791	267	1.150	1500
2440-38	362	0.607	791	357	1.534	2000
2450-38	453	0.607	791	446	1.917	2500
2460-38	544	0.607	791	535	2.300	3000
2470-38	634	0.607	791	624	2.684	3500
3010-38	146	0.979	1277	140	0.499	650
3020-38	293	0.979	1277	280	0.997	1300
3030-38	439	0.979	1277	420	1.496	1950
3040-38	585	0.979	1277	560	1.994	2600
3050-38	731	0.979	1277	700	2.493	3250
3060-38	878	0.979	1277	840	2.991	3900
3070-38	1024	0.979	1277	981	3.490	4550

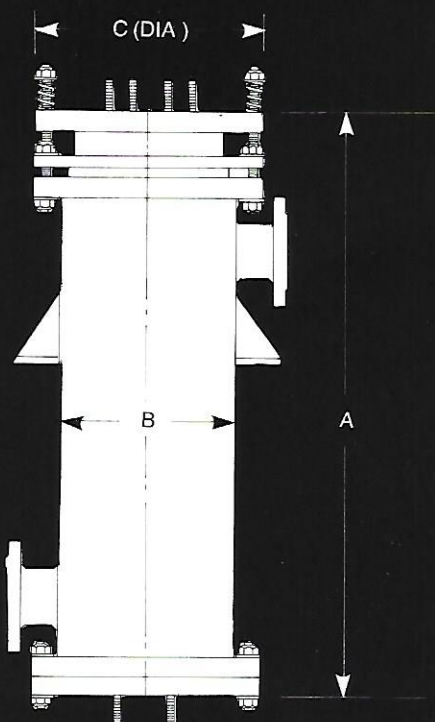
MODEL NO.	PROCESS - HTA - Heat Transfer Area (Ft ²)	PROCESS - CSA - Cross Sectional Area (Ft ²)	No. of Process Holes	SERVICE - HTA - Heat Transfer Area (Ft ²)	SERVICE - CSA - Cross Sectional Area (Ft ²)	No. of Service Holes
1210-5	18	0.165	121	20	0.153	200
1220-5	37	0.165	121	41	0.307	400
1230-5	55	0.165	121	62	0.460	600
1240-5	74	0.165	121	82	0.614	800
1250-5	92	0.165	121	103	0.767	1000
1260-5	111	0.165	121	123	0.920	1200
1270-5	129	0.165	121	144	1.074	1400
1610-5	32	0.285	209	34	0.192	250
1620-5	64	0.285	209	67	0.384	500
1630-5	96	0.285	209	101	0.576	750
1640-5	128	0.285	209	135	0.768	1000
1650-5	160	0.285	209	168	0.960	1250
1660-5	192	0.285	209	202	1.152	1500
1670-5	223	0.285	209	236	1.344	1750
2410-5	78	0.696	511	78	0.331	432
2420-5	156	0.696	511	155	0.662	864
2430-5	234	0.696	511	233	0.994	1296
2440-5	312	0.696	511	311	1.325	1728
2450-5	390	0.696	511	388	1.656	2160
2460-5	468	0.696	511	466	1.988	2592
2470-5	546	0.696	511	544	2.319	3024
3010-5	129	1.155	847	123	0.422	550
3020-5	259	1.155	847	246	0.844	1100
3030-5	388	1.155	847	369	1.266	1650
3040-5	517	1.155	847	491	1.687	2200
3050-5	647	1.155	847	614	2.110	2750
3060-5	776	1.155	847	737	2.531	3300
3070-5	905	1.155	847	860	2.953	3850

APPLICATIONS:

- USE FOR HEATING, COOLING & CONDENSING
- FOR MAXIMUM HEAT TRANSFER AREA PER SHELL SIZE
- MAXIMUM ALLOWABLE WORKING PRESSURE —
PROCESS: 100 PSIG
SERVICE: 100 PSIG

APPLICATIONS:

- USE FOR HEATING, COOLING & CONDENSING
- LARGER HOLE SIZE WHERE POTENTIAL FOULING MAY EXIST
- MAXIMUM ALLOWABLE WORKING PRESSURE —
PROCESS: 100 PSIG
SERVICE: 100 PSIG



Model No.	Overall Dimensions - Inches			Empty Weight (lbs.)
	A	B	C	
1210	29"	14"	18"	700
1220	43	14	18	825
1230	57	14	18	950
1240	71	14	18	1075
1250	85	14	18	1200
1260	99	14	18	1325
1270	113	14	18	1450
1610	31	18	22	1000
1620	45	18	22	1200
1630	59	18	22	1400
1640	73	18	22	1600
1650	87	18	22	1800
1660	101	18	22	2000
1670	115	18	22	2200
2410	34	26	31	2250
2420	48	26	31	2675
2430	62	26	31	3100
2440	77	26	31	3525
2450	91	26	31	3950
2460	105	26	31	4375
2470	119	26	31	4800
3010	34	32	37	3200
3020	48	32	37	3850
3030	62	32	37	4500
3040	77	32	37	5150
3050	91	32	37	5800
3060	105	32	37	6450
3070	119	32	37	7100

**SERIES
100**

**3/4" PROCESS HOLES ×
3/8" SERVICE HOLES**

MODEL NO.	PROCESS - HTA - Heat Transfer Area (Ft ²)	PROCESS - CSA - Cross Sectional Area (Ft ²)	No. of Process Holes	SERVICE - HTA - Heat Transfer Area (Ft ²)	SERVICE - CSA - Cross Sectional Area (Ft ²)	No. of Service Holes
1210-75	13	0.175	57	15	0.110	144
1220-75	26	0.175	57	31	0.221	288
1230-75	39	0.175	57	46	0.331	432
1240-75	52	0.175	57	62	0.442	576
1250-75	65	0.175	57	77	0.552	720
1260-75	78	0.175	57	93	0.663	864
1270-75	91	0.175	57	108	0.773	1008
1610-75	24	0.316	103	26	0.147	192
1620-75	47	0.316	103	52	0.295	384
1630-75	71	0.316	103	78	0.441	576
1640-75	94	0.316	103	104	0.589	768
1650-75	118	0.316	103	130	0.736	960
1660-75	142	0.316	103	156	0.884	1152
1670-75	165	0.316	103	182	1.031	1344
2410-75	59	0.788	257	55	0.221	288
2420-75	118	0.788	257	110	0.442	576
2430-75	177	0.788	257	164	0.663	864
2440-75	235	0.788	257	219	0.884	1152
2450-75	294	0.788	257	274	1.104	1440
2460-75	353	0.788	257	329	1.325	1728
2470-75	412	0.788	257	384	1.546	2016
3010-75	96	1.285	419	87	0.295	384
3020-75	192	1.285	419	174	0.589	768
3030-75	288	1.285	419	261	0.884	1152
3040-75	384	1.285	419	348	1.178	1536
3050-75	480	1.285	419	435	1.473	1920
3060-75	576	1.285	419	522	1.767	2304
3070-75	672	1.285	419	609	2.062	2688

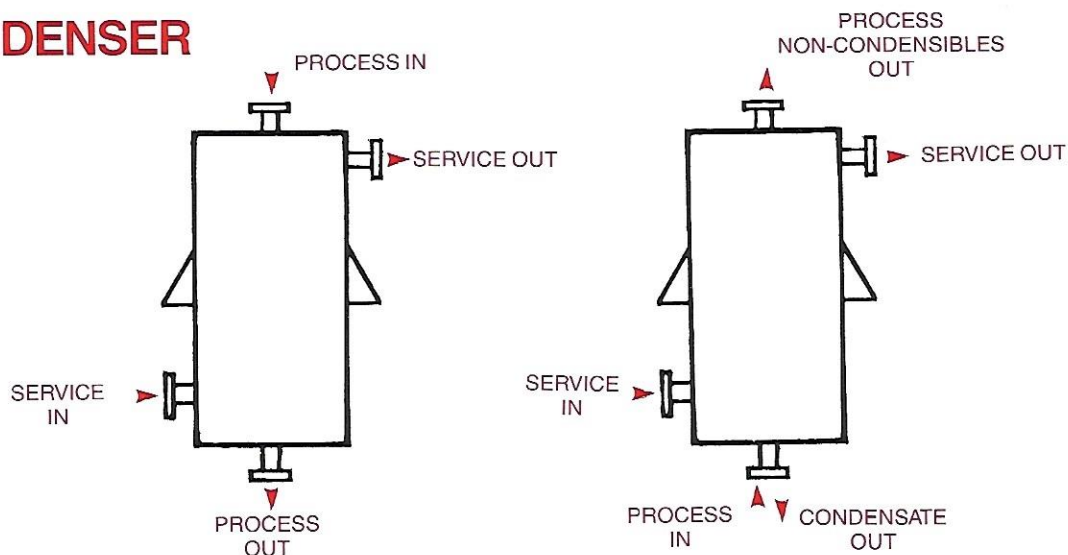
APPLICATIONS:

- USE FOR EVAPORATION & CONDENSING
- AFFORDS MORE CROSS-SECTIONAL FLOW AREA WHERE PRESSURE DROP MAY BE A PROBLEM
- MAXIMUM ALLOWABLE WORKING PRESSURE —
PROCESS: 100 PSIG
SERVICE: 100 PSIG

- Higher allowable working pressures are available. Please consult with Carbone Sales Engineering Department for further details.
- Exchangers are hydrostatically tested at 1½ times MAWP on process and service sides prior to shipment.
- All graphite components are pneumatically tested after resin impregnation for assurance of an impervious graphite structure.
- The highest standards of quality control are maintained throughout the manufacturing process.

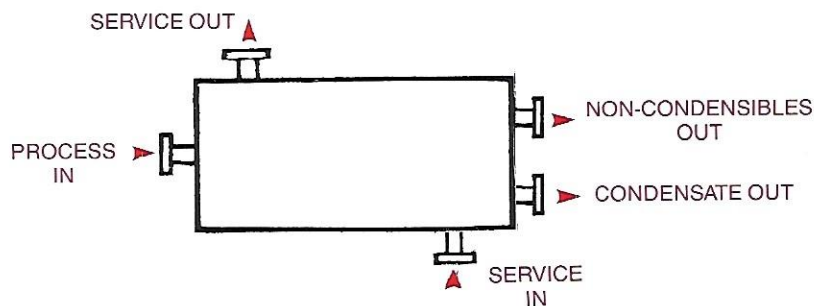
DESIGN OPTIONS

AS CONDENSER



SINGLE PASS VERTICAL
(CONDENSATE & NON-CONDENSIBLES
LEAVE AT SAME TEMPERATURE)

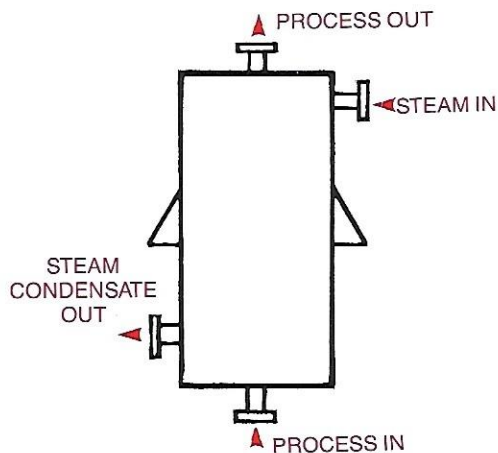
KNOCKBACK
(CONDENSATE IN TEMPERATURE
EQUILIBRIUM WITH PROCESS INLET,
NON-CONDENSIBLES SUBCOOLED)



SINGLE PASS HORIZONTAL OR INCLINED
(CONDENSATE & NON-CONDENSIBLES LEAVE AT
SAME TEMPERATURE BUT ARE SEPARATED IN OUTLET
HEAD. USE LIQUID SEAL ON CONDENSATE LEG.)

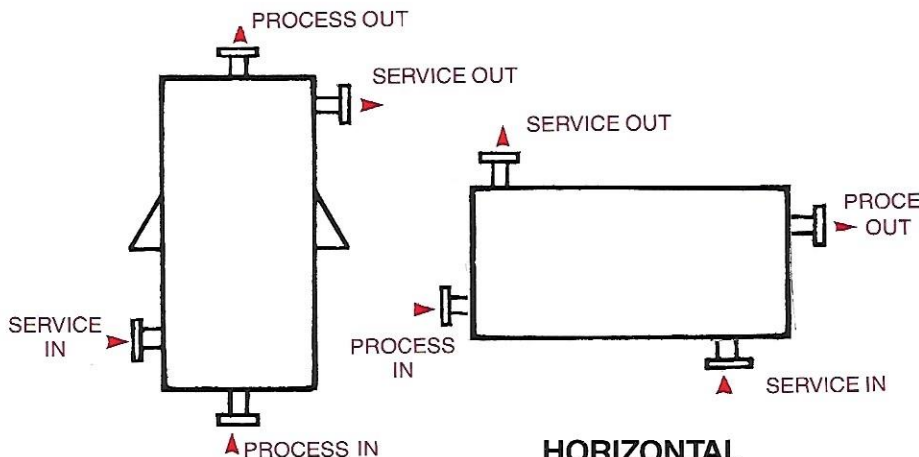
NOTE: MULTIPASS
HORIZONTAL PROCESS
FLOW CAN BE USED
TO IMPROVE EFFICIENCY
IN CONDENSERS.

AS EVAPORATOR FORCED FEED OR THERMOSYPHON REBOILER



NOTE: VELOCITY AND BOILUP RATES
ARE CRITICAL. CARBONE CAN ASSIST WITH
COMPUTERIZED DESIGNS.

AS LIQUID/LIQUID HEATERS & COOLERS AND LIQUID/STEAM HEATERS



VERTICAL

HORIZONTAL

NOTE: FOR STEAM HEATING SERVICE
FLOWS WOULD BE REVERSED.