

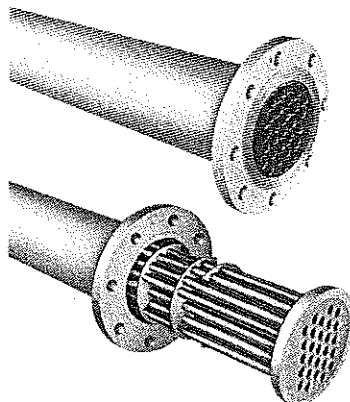


Hydro-Cool Aftercoolers For Compressed Air Systems

- High Efficiency, Shorter Length
- Fixed or Removable Tube Bundles
- Easy Installation, Packaging
- ASME Coded - Most Models
- Variety of Construction Materials for Special Environments
- High Pressure Models . . .
More Applications

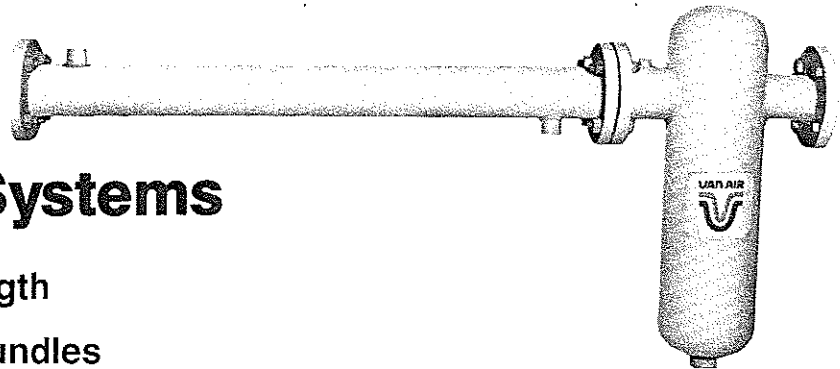
PURPOSE: Van Air Hydro-Cool Aftercoolers perform two essential functions that provide the necessary first step in conditioning pneumatic power. They reduce the temperature of the discharge air from the compressor to a safe operating range, and they remove substantial amounts of the entrained moisture.

OPERATION: Compressed air passes through the tubes and water flows in the opposite direction through the shell. Countercurrent flow provides the most effective method of bringing the final air temperature close to the cooling water temperature. Baffles create turbulent water flow across the tubes, reducing the amount of cooling water used. The air to be cooled is directed through multiple tubes fitted with brass inserts which divide the flow into thinner streams, substantially increasing the heat transfer. Plain tubes allow "coring" where the inner portion of the air stream is not cooled.



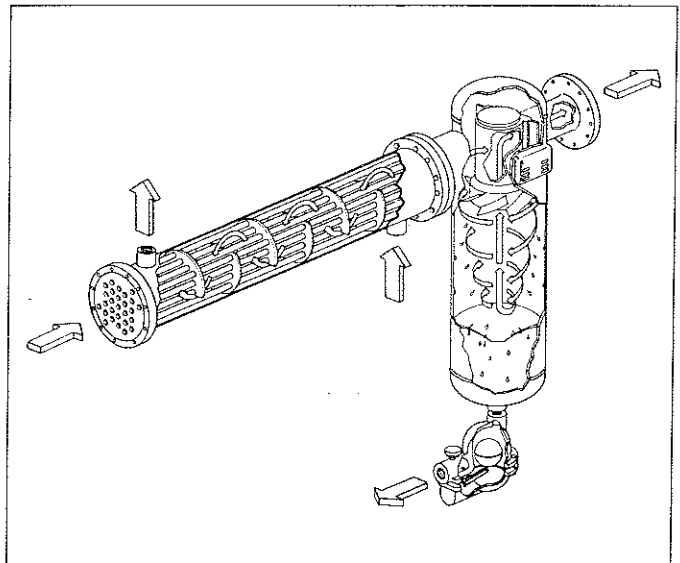
FIXED
TUBE
BUNDLE
(WF Series)

REMOVABLE
TUBE
BUNDLE
(WR Series)



CONSTRUCTION: Hydro-Cool heat exchangers are compact. Standard models are 51" long and new high efficiency models are 59" long. In both fixed and removable tube bundles, the tubes are welded to the tube sheet. This combined with the short length results in a rugged unit that allows thermal expansion to be absorbed within the aftercooler. Standard materials of construction are copper tubes with carbon steel shells.

SEPARATORS FOR WATER REMOVAL: As condensed water and other contaminants enter the separator from the aftercooler, a fixed impeller creates a vortex, whirling the air outward and downward against the vessel wall. The centrifugal action spins out the water which falls into the condensate claim area and can be drained automatically with an SAC float trap or electric drain valve.



FLOW DIAGRAM OF A TYPICAL WATER-COOLED AFTERCOOLER WITH SEPARATOR AND DRAIN TRAP.

SIZING YOUR AFTERCOOLER

- 1.) Enter Capacity (SCFM) chart at the appropriate compressed air inlet temperature and desired approach temperature.
- 2.) Move down the column until you reach the SCFM flow required.
- 3.) Read to the left to find the corresponding model number.
- 4.) After the required aftercooler model has been selected, the appropriate connector kit and separator models can be determined in the Dimensional Data chart. Recommended separators are based on rated capacities; connection sizes are not necessarily the same.
- 5.) To install aftercooler and recommended separator, specify the indicated connector kit which contains required items such as gaskets, unions, or reducers.
- 6.) SAC-120 drain is recommended for separator models WSH-1 thru WSH-7; SAC-1 for all other models.
- 7.) Separator drain connections: 1/2" N.P.T. models WSH-1 thru WSH-3. WSH-4 and larger 1" N.P.T.
- 8.) **Inlet air temperatures listed in Capacity (SCFM) chart approximate discharge temperature from rotary compressor (200°F), two-stage reciprocating (250°F) and single-stage reciprocating (350°F).**
- 9.) **Rating conditions are 75°F ambient, 50% RH, 100 psig compressed air, 80°F cooling water at 3.5 gpm per 100 cfm with average outlet air pressure differential of less than 2 psid.**

CAPACITY (SCFM)																
Inlet Temperature		200°F			250°F			300°F			350°F			400°F		
Appr. Temperature		10	15	20	10	15	20	10	15	20	10	15	20	10	15	20
Fixed	Removable															
WF-3	—	—	74	—	—	52	78	—	40	60	—	33	46	—	—	—
WF-4	—	88	148	—	60	104	156	40	80	120	28	66	92	20	52	76
WF-5	—	154	259	—	105	182	273	70	140	210	49	116	161	35	91	133
WF-6	—	264	444	—	180	312	468	120	240	360	84	198	276	60	156	228
WF-7	WR-7	264	444	—	180	312	468	120	240	360	84	198	276	60	156	228
WF-11	WR-11	418	703	—	285	494	741	190	380	570	133	314	437	95	247	361
WF-16	WR-16	594	999	—	405	702	1053	270	540	810	189	446	621	135	351	513
WF-21	WR-21	682	1147	—	465	806	1209	310	620	930	217	512	713	155	403	589
WF-27	WR-27	924	1554	—	630	1092	1638	420	840	1260	294	693	966	210	546	798
WF-35	WR-35	1210	2035	—	825	1430	2145	550	1100	1650	385	908	1265	275	715	1045
WF-42	WR-42	1408	2368	—	960	1664	2496	640	1280	1920	448	1056	1472	320	832	1216
WF-65	WR-65	2398	4033	—	1635	2834	4251	1090	2180	3270	763	1799	2507	545	1417	2071
WF-90	WR-90	3322	5587	—	2265	3926	5889	1510	3020	4530	1057	2492	3472	755	1963	2869
WF-125	WR-125	4642	7807	—	3165	5486	8229	2110	4220	6330	1477	3482	4853	1055	2743	4009
WF-150	WR-150	5566	9361	—	3795	6578	9867	2530	5060	7590	1771	4175	5819	1265	3289	4807

NOTE: Selection of the approach temperature is critical to operation of downstream equipment such as dryers. Operating specifications of downstream equipment must be considered when sizing an aftercooler.

High Efficiency Models

- 30% Greater Flow Capacity
- 30% Less Water Consumption per 100 SCFM
- Greater Efficiency at Lower Approach Temperatures
- Similar Construction
- Same Accessories and Options Available

CAPACITY (SCFM)																
Inlet Temp.		200°F			250°F			300°F			350°F			400°F		
Appr. Temp.		5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Fixed	Removable															
WF-3.9	—	32	62	78	20	50	77	13	40	60	9	32	49	—	26	42
WF-4.9	—	64	124	156	40	100	154	26	80	120	18	64	98	4	52	84
WF-5.9	—	112	217	273	70	175	270	46	140	210	32	112	172	7	91	147
WF-6.9	—	192	372	468	120	300	462	78	240	360	54	192	294	12	156	252
WF-7.9	WR-7.9	192	372	468	120	300	462	78	240	360	54	192	294	12	156	252
WF-11.9	WR-11.9	304	589	741	190	475	732	124	380	570	86	304	466	19	247	399
WF-16.9	WR-16.9	432	837	1053	270	675	1040	176	540	810	122	432	662	27	351	567
WF-21.9	WR-21.9	496	961	1209	310	775	1194	202	620	930	140	496	760	31	403	651
WF-27.9	WR-27.9	672	1302	1638	420	1050	1617	273	840	1260	189	672	1029	42	546	882
WF-35.9	WR-35.9	880	1705	2145	550	1375	2118	358	1100	1650	248	880	1348	55	715	1155
WF-42.9	WR-42.9	1024	1984	2496	640	1600	2464	416	1280	1920	288	1024	1568	64	832	1344
WF-65.9	WR-65.9	1744	3379	4251	1090	2725	4197	709	2180	3270	491	1744	2671	109	1417	2289
WF-90.9	WR-90.9	2416	4681	5889	1510	3775	5814	982	3020	4530	680	2416	3700	151	1963	3171
WF-125.9	WR-125.9	3376	6541	8229	2110	5275	8121	1372	4220	6330	950	3376	5170	211	2743	4431
WF-150.9	WR-150.9	4048	7843	9867	2530	6325	9741	1645	5060	7590	1139	4048	6199	253	3289	5313
WF-200.9	WR-200.9	4528	8773	11037	2830	7075	10896	1840	5660	8490	1274	4528	6934	283	3679	5443

Higher flows available - contact factory.

DIMENSIONAL DATA																
Heat Exchanger Model		Dimensions (inches)									After-Cooler	Connector Kit		Separator		
Fixed	Removable	A	B	C	D	E	F	G	H	I	Weight	Model	Weight	Model	SCFM	Weight
WF-3	—	58 $\frac{3}{8}$	51 $\frac{1}{8}$	3 $\frac{1}{2}$	9 $\frac{7}{8}$	8 $\frac{7}{8}$	4	1 $\frac{1}{2}$ NPT	$\frac{1}{2}$ NPT	$\frac{3}{4}$ NPT	16	WCH-1B	1	WSH-1	100	2
WF-4	—	59 $\frac{1}{8}$	51 $\frac{1}{8}$	3 $\frac{1}{2}$	9 $\frac{7}{8}$	8 $\frac{7}{8}$	4	2 NPT	$\frac{1}{2}$ NPT	$\frac{3}{4}$ NPT	22	WCH-1C	2	WSH-1	100	2
WF-5	—	60 $\frac{1}{4}$	51 $\frac{1}{8}$	4 $\frac{3}{8}$	13 $\frac{7}{8}$	12 $\frac{1}{2}$	4	2 $\frac{1}{2}$ NPT	$\frac{1}{2}$ NPT	1 $\frac{1}{2}$ NPT	30	WCH-2	3	WSH-2	300	4
WF-6	—	62	51 $\frac{1}{8}$	5 $\frac{1}{8}$	21 $\frac{7}{8}$	20 $\frac{1}{8}$	4	3 NPT	$\frac{3}{4}$ NPT	2 NPT	46	WCH-3	5	WSH-3	550	12
WF-7	WR-7	66	51 $\frac{1}{8}$	14 $\frac{3}{4}$	26	19 $\frac{3}{8}$	4 $\frac{1}{2}$	2 $\frac{1}{2}$ FLG	$\frac{3}{4}$ NPT	2 $\frac{1}{2}$ FLG	60	WCH-4	5	WSH-4	900	56
WF-11	WR-11	75 $\frac{1}{4}$	51 $\frac{1}{8}$	14 $\frac{3}{4}$	26	19 $\frac{1}{4}$	4 $\frac{9}{16}$	3 FLG	$\frac{3}{4}$ NPT	2 $\frac{1}{2}$ FLG	89	WCH-5	25	WSH-4	900	56
WF-16	WR-16	76	51 $\frac{1}{8}$	14 $\frac{3}{4}$	26	19 $\frac{1}{4}$	4 $\frac{3}{4}$	4 FLG	1 NPT	2 $\frac{1}{2}$ FLG	122	WCH-6	33	WSH-4	900	56
WF-21	WR-21	76	51 $\frac{1}{8}$	14 $\frac{3}{4}$	26	19 $\frac{1}{4}$	4 $\frac{1}{16}$	4 FLG	$\frac{1}{4}$ NPT	2 $\frac{1}{2}$ FLG	128	WCH-6	33	WSH-4	900	56
WF-27	WR-27	78 $\frac{3}{4}$	51 $\frac{1}{8}$	16	29	21 $\frac{1}{4}$	4 $\frac{1}{16}$	5 FLG	$\frac{1}{4}$ NPT	3 FLG	168	WCH-7	40	WSH-4.5	1400	85
WF-35	WR-35	83	51 $\frac{1}{8}$	20	35 $\frac{1}{4}$	25 $\frac{7}{8}$	5	5 FLG	$\frac{1}{2}$ NPT	4 FLG	181	WCH-7A	46	WSH-5	1500	120
WF-42	WR-42	87	51 $\frac{1}{8}$	22	38 $\frac{3}{4}$	28 $\frac{3}{4}$	6 $\frac{3}{8}$	8 FLG	2 NPT	5 FLG	265	WCH-8	81	WSH-6	2800	200
WF-65	WR-65	88	51 $\frac{1}{8}$	22	38 $\frac{3}{4}$	28 $\frac{3}{4}$	7 $\frac{1}{16}$	10 FLG	2 $\frac{1}{2}$ NPT	5 FLG	389	WCH-9	103	WSH-6	2800	200
WF-90	WR-90	92 $\frac{1}{2}$	51 $\frac{1}{8}$	26	45 $\frac{3}{4}$	33 $\frac{3}{4}$	7 $\frac{1}{16}$	10 FLG	2 $\frac{1}{2}$ NPT	8 FLG	399	WCH-9A	126	WSH-8	3900	350
WF-125	WR-125	98	51 $\frac{1}{8}$	30	50 $\frac{1}{4}$	36 $\frac{3}{4}$	7 $\frac{1}{8}$	12 FLG	2 $\frac{1}{2}$ NPT	8 FLG	600	WCH-10	172	WSH-9	5800	400
WF-150	WR-150	103 $\frac{1}{2}$	51 $\frac{1}{8}$	30	58 $\frac{3}{4}$	43	8	14 FLG	2 $\frac{1}{2}$ NPT	8 FLG	775	WCH-11	235	WSH-10	6800	750

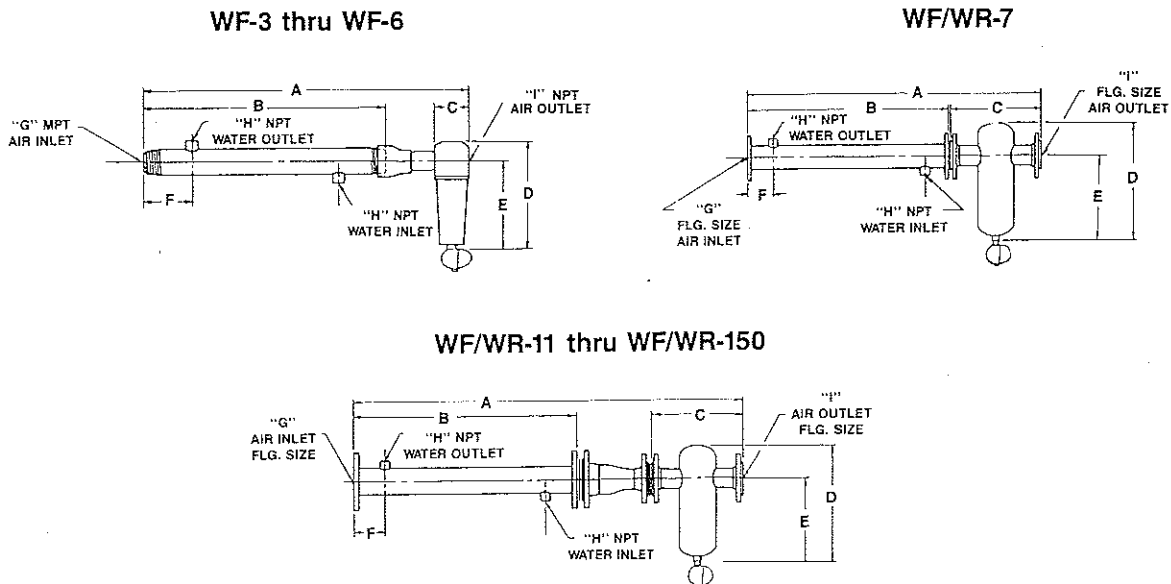
- NOTES: 1.) Flanges - ANSI 150# Raised Face.
 2.) Dimensions and specifications subject to change without notice. Request certified drawings for pre-piping.
 3.) Maximum working pressure for aftercooler models WF-3 thru WF-6 is 300 PSIG at 400°F tube side and 300 PSIG at 150°F shell side. Maximum working pressure for models WF/WR-7 thru WF/WR-150 is 200 PSIG at 400°F tube side and 200 PSIG at 150°F shell side.
 4.) Maximum working pressure for separator models WSH-1 through WSH-3 is 230 PSIG; WSH-4 and larger is 200 PSIG.
 5.) ASME Code - Welded construction aftercooler and separator vessels are fabricated in accordance with ASME Code, Section VIII. Standard models are stamped and certified as shown. Optional "U" stamp is available where indicated.

	ASME Stamp		ASME Stamp
Aftercoolers	Standard	Separators	Standard
WF-3 thru WF-6	—	WSH-1 thru WSH-3	—
WF/WR-7 thru WF/WR-150	U	WSH-4 thru WSH-10	U

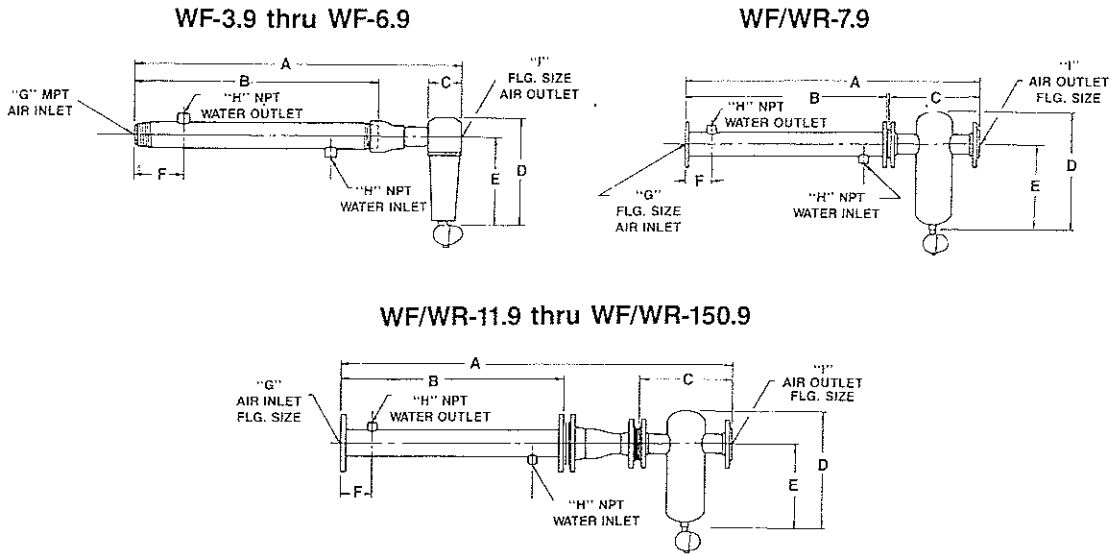
OPTIONAL EQUIPMENT AND SPECIAL MODELS

- SAC Automatic Drain Traps** - Lightweight traps are constructed with corrosion-resistant float and lever mechanisms that provide high closing pressures against the valve seats. Model SAC-120 with $\frac{1}{2}$ " NPT connection discharges 128 gallons per hour @ 100 psig and Model SAC-1 with 1" NPT discharges 168 gallons per hour. Maximum working pressure is 230 psig for SAC-120 and 175 psig for SAC-1 models. For more information, see data spec SAC1.2.
- Stainless Steel (304 & 316) Tubes** - For corrosive atmospheres; helical configuration spins air for effective heat transfer.
- Plain Tubes** - For low pressure (blower) applications.
- Cupro Nickel Tubes & Tube Sheets** - For salt water atmospheres.
- Higher Pressures** - Available for special applications.
- Larger Capacities** - Units for flows to 27,000 scfm.

Dimensional Data



Dimensional Data



DIMENSIONAL DATA																
Heat Exchanger Model		Dimensions (inches)									After-Cooler	Connector Kit		Separator		
Fixed	Removable	A	B	C	D	E	F	G	H	I	Weight	Model	Weight	Model	SCFM	Weight
WF-3.9	—	66½	59	3½	9⅞	8⅞	4	1½ NPT	½ NPT	¾ NPT	20	WCH-1B	1	WSH-1	100	2
WF-4.9	—	67	59	3½	9⅞	8⅞	4	2 NPT	½ NPT	¾ NPT	26	WCH-1C	2	WSH-1	100	2
WF-5.9	—	68⅞	59	4⅜	13⅞	12½	4	2½ NPT	½ NPT	1½ NPT	34	WCH-2	3	WSH-2	300	4
WF-6.9	—	69⅞	59	5⅜	21⅞	20⅞	4	3 NPT	¾ NPT	2 NPT	53	WCH-3	5	WSH-3	550	12
WF-7.9	WR-7.9	73⅞	59	14¾	26	19¼	4½	2½ FLG	¾ NPT	2½ FLG	69	WCH-4	5	WSH-4	900	56
WF-11.9	WR-11.9	83⅞	59	14¾	26	19¼	4⅞	3 FLG	¾ NPT	2½ FLG	102	WCH-5	25	WSH-4	900	56
WF-16.9	WR-16.9	83⅞	59	14¾	26	19¼	4¾	4 FLG	1 NPT	2½ FLG	137	WCH-6	33	WSH-4	900	56
WF-21.9	WR-21.9	83⅞	59	14¾	26	19¼	4⅞	4 FLG	1¼ NPT	2½ FLG	144	WCH-6	33	WSH-4	900	56
WF-27.9	WR-27.9	86⅞	59	16	29	21¼	4⅞	5 FLG	1¼ NPT	3 FLG	188	WCH-7	40	WSH-4.5	1400	85
WF-35.9	WR-35.9	90⅞	59	20	35¼	26	5	5 FLG	1½ NPT	4 FLG	205	WCH-7A	46	WSH-5	1500	120
WF-42.9	WR-42.9	94⅞	59	22	38¾	28¾	6⅞	8 FLG	2 NPT	5 FLG	297	WCH-8	81	WSH-6	2800	200
WF-65.9	WR-65.9	94⅞	59	22	38¾	28¾	7⅞	10 FLG	2½ NPT	5 FLG	440	WCH-9	103	WSH-6	2800	200
WF-90.9	WR-90.9	100⅞	59	26	45¾	33¾	7⅞	10 FLG	2½ NPT	8 FLG	450	WCH-9A	126	WSH-8	3900	350
WF-125.9	WR-125.9	105⅞	59	30	50¼	36¾	7⅞	12 FLG	2½ NPT	8 FLG	660	WCH-10	172	WSH-9	5800	400
WF-150.9	WR-150.9	111⅞	59	30	58¾	43	8	14 FLG	2½ FLG	8 FLG	850	WCH-11	235	WSH-10	6800	750
WF-200.9	WR-200.9	95⅞	59	36½	69⅞	50½	8	14 FLG	4 FLG	8 FLG	950	—	—	WSH-12	10,200	1,150

- NOTES:**
- 1.) Flanges - ANSI 150# Raised Face.
 - 2.) Dimensions and specifications subject to change without notice. Request certified drawings for pre-piping.
 - 3.) Maximum working pressure for aftercooler models WF-3.9 thru WF-6.9 is 300 PSIG at 400°F tube side and 300 PSIG at 150°F shell side. Maximum working pressure for models WF/WR-7.9 thru WF/WR-150.9 is 200 PSIG at 400°F tube side and 200 PSIG at 150°F shell side.
 - 4.) Maximum working pressure for separator models WSH-1 through WSH-3 is 230 PSIG; WSH-4 and larger models is 200 PSIG.
 - 5.) ASME Code - Welded construction aftercooler and separator vessels are fabricated in accordance with ASME Code, Section VIII. "U" stamp is furnished where indicated.
 - 6.) Larger sizes available - contact factory.

Aftercoolers
 WF-3.9 thru WF-6.9
 WF/WR-7.9 thru WF/WR-200.9

ASME Stamp
 Standard
 —
 U

Separators
 WSH-1 thru WSH-3
 WSH-4 thru WSH-12

ASME Stamp
 Standard
 —
 U

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