De Dietrich
PROCESS SYSTEMS

STORAGE TANKS
GLASS-LINED STEEL
De Dietrich

DDPS Quality Production

De Dietrich Process Systems' storage tanks are lined with versatile 3009 glass to handle your toughest liquid storage needs - a superior lining for corrosive chemicals or high purit pharmaceuticals. 3009 offers full-circle protection against corrosion, resisting chemical deterioration across the entire pH range, as well as excellent thermal shock resislance.

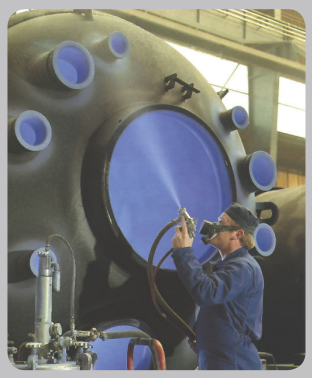
Our sophisticated glassing facility in Corpus Christi, Texas manufacturers new tanks to your exact needs, or reglasses your existing vessel to "as new" condition.

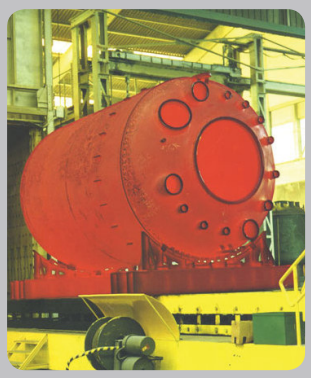
All DDPS equipment is manufactured to the highest quality standards for workmanship and materials, with generous steel corrosion allowances for strength and long life. Vessels are designed, constructed and stamped in accordance with the latest edition of the ASME Code for Unfired Pressure Vessels. Section VIII, Division 1, and National Board registered. All clamps and flanges comply with ANSI standards. Welding procedures comply with Section IX of the ASME Code.

DDPS quality assurance programs include non-destructive x-ray, dye-penetrant and ultrasonic examination of welding, high-precision electronic apparatus to test the glass thickness and 20,000 volt spark testing to assure the integrity of the glass-lining.

The Glassing Process

Application of the glass-lining is a meticulous process, beginning with careful surface preparation. The glass is sprayed on the prepared steel and then fused to the steel by computer controlled firing cycles in sophisticated electric furnaces. This same process is used for reglassing existing equipment.





30,000 gallon tank ready for shipment.

Several Series of Tanks

Three series of tanks are offered in various sizes ranging from 13 to 35,000 gallons to fill all plant storage needs:

- CR Series vertical tanks are available in sizes 13 to 200 gallons. They are a clamped-top design.
- VT Series vertical tanks are available in sizes 300 to 35,000 gallons. They are closed-welded construction.
- HT Series horizontal tanks are available in sizes 300 to 35,000 gallons. HT Series tanks are one-piece, closed-welded construction with the manway and nozzles on the top side.

Heating and Cooling

All vertical tanks can be supplied with closed-welded jacketing. DDPS narrow-annulus jackets provide higher velocity of heat transfer media for faster heating, cooling and drainage. Panel coil jacketing is also available on vertical and horizontal tanks.

Clamps and Gasketing

Sturdy, forged-steel clamps, electro-galvanized for corrosion resistance, secure all tank covers. A special stainless steel cable holds the clamps in place like keys on a ring, so they can not be dropped or fall into the vessel when loosened. The clamps remain in their original position, ready for use. This simple detail is a tremendous convenience in maintenance work. Galvanized clamp steel cap nuts are supplied as a standard on all HT and VT manways.

All covers are fitted with envelope type gaskets. Optional PTFE protection rings are also recommended for frequently used manways. Opening and closing heavy manway covers can be made easier and safer by the use of either the DDPS manway cover assist or the traditional manway davit assembly.

Agitation

Tanks can be supplied on special order with optional mixer for use in blending, dissolving or suspending.

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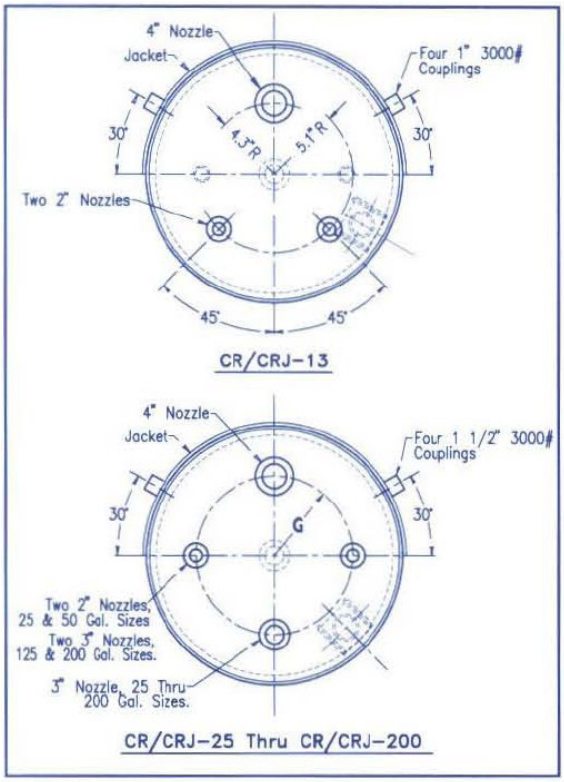
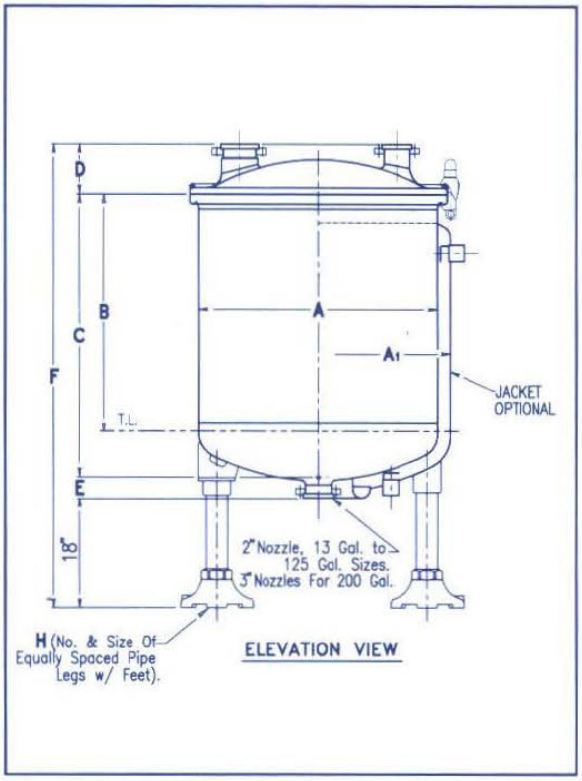
STORAGE TANKS
CLAMP TOP DESIGN





Vertical Tanks, Series CR & CRJ, 13 to 200 Gallons

Nom. Capacity Gal.	13	25	50	125	200
Total Capacity Gal.	14	29.5	55	136	230
A = Vessel Dia.	16	20	24	31.5	39.38
A_1 = Jacket Dia.	19.75	23.75	27.5	35.5	43.38
B = Straight Side	15	20	27	37.5	39
C = Depth	18	23.63	31.5	43.38	46.38
D = Nozzle Projection	5.5	6	6.31	6.75	8
E = Btm. Nozzle Projection	3.13	3.13	3.13	3.13	3.38
F = Overall Height	45	51	59.25	71.5	76
G = Nozzle radius	See Above	6.5	7	10.63	13
H = Leg: No. & Size	(3) - 2"	(3) - 2"	(3) - 2"	(3) - 2"	(4) - 3"
Pressure, PSIG (int.)	100	100	100	100	100
Pressure, Hg (ext.)	FV	FV	FV	FV	FV
Shell thickness	.38	.38	.38	.38	.50
CR Weight, lbs. (approx.)	247	386	595	1,058	1,455
CRJ Weight, lbs. (approx.)	340	480	675	1,250	1,990

All Dimensions are in Inches

Notes to Specifications

1. Vessel design temperature 400°F/204°C for CR and CRJ series in accordance with ASME Code, Section VIII, Division 1, current edition, latest addenda.
2. The standard tank supports are designed for use with contents having a maximum 1.8 specific gravity. Consult DDPS where wind and seismic loading must be considered.
3. Hydrostatic test: Tanks are tested at 1.1 times design pressure.
4. Clamps: Mounted on stainless steel retaining cable, complete with nuts, flat washers and plastic caps.
5. Gaskets: PTFE envelope type with corrugated stainless steel insert, provided for occupied nozzles only.
6. Exterior paint: Zinc-rich, epoxy-bound primer, epoxy enamel finish coat.

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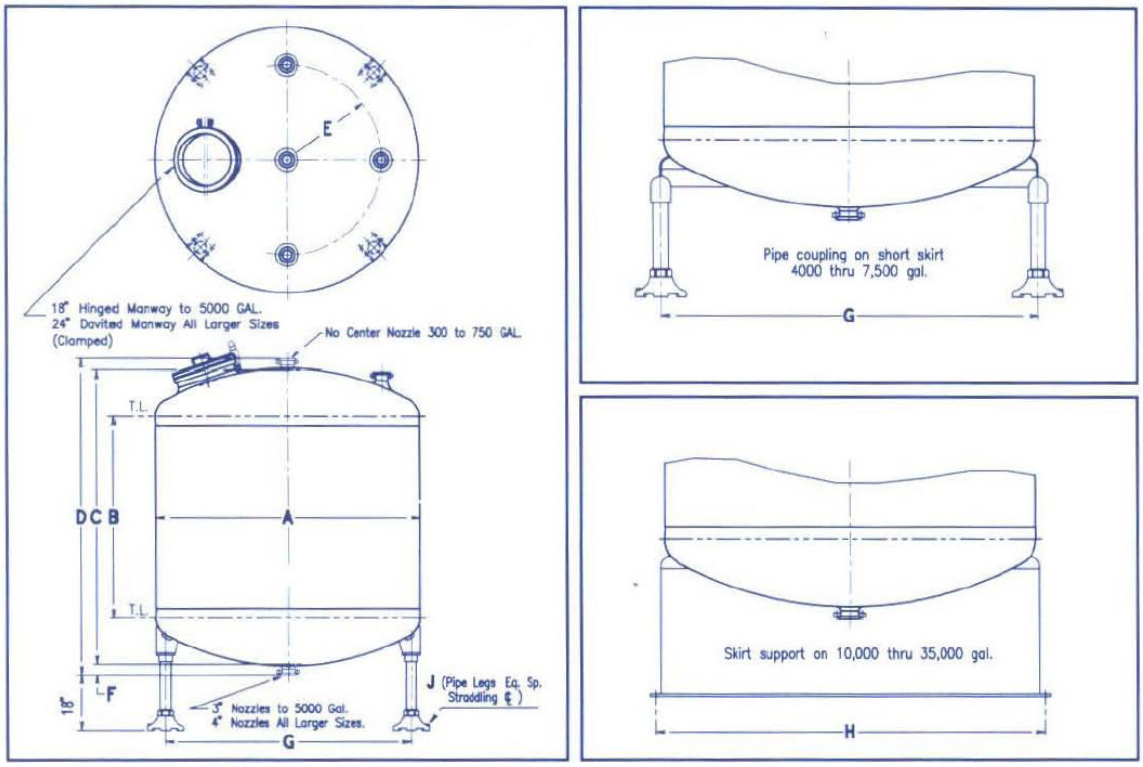
STORAGE TANKS
GLASS-LINED STEEL



Vertical Tanks, Series VT 300 to 35,000 Gallons

Nom. Capacity Gal.	300	500	750	1,000	1,500	2,000	2,500	3,000	4,000	5,000	7,500	10,000	12,500	15,000	17,500	20,000	25,000	30,000	35,000
Total Capacity Gal.	324	537	840	1,074	1,588	2,110	2,624	3,136	4,144	5,104	7,690	10,256	12,868	15,483	18.031	20,562	24,871	31,651	35,600
A = Vessel Dia.	40	48	56	63	72	86	86	86	102	102	118	118	118	134	134	142	150	157	162
B = T.L to T.L	54	60	70	68	78	63	84	105	94	126	140.4	196	252.2	228	271	274	298	350	369
C = Crown to Crown	68.5	78	91	90.5	102	96	117	138	133	162	183	238.5	295	279	322	328	355	409	450
D = Nozzle to Nozzle	-	-	-	97.5	109	103	124	145	140	169	191	246.5	303	287	330	336	363	417	459
E = Nozzle radius	14	18	22	25	27	27	31	31	31	38	47	47	47	50	50	53	56	60	65
F = Btm. Nozz. Proj.	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4	4	4
G = Leg Dia.	33.5	41.5	49.25	57	6.5	65	80.75	80.75	80.75	104.5	120	120	120	-	-	-	-	-	-
H = Bolt Circle Dia.	-	-	-	-	-	-	-	-	-	-	-	-	-	139.75	139.75	147.63	155.5	165	173
J = Leg: No. & Size	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(6) - 3	(8) - 3	(8) - 4	Skirt Support (12) 1-1/2" Dia. Bolt Holes							
Top nozz., No. & Size	(3) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 3	(4) - 4	(4) - 4	(4) - 4	(4) - 4	(4) - 4	(4) - 4	(4) - 4	(4) - 4	(4) - 4
Bottom nozzle, size	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4
Pressure, PSIG (int.)	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
Pressure, Hg (ext.)	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Head thickness (min.)	.50	.50	.50	.56	.56	.56	.56	.56	.63	.63	.75	.75	.75	.88	.88	1	1	1	1.13
Shell thickness	.50	.50	.50	.50	.50	.50	.50	.50	.63	.63	.63	.63	.63	.75	.75	.88	.88	1	1.13
Weight, lbs. (approx.)	2,130	2,712	3,504	4,200	5,250	6,210	6,680	7,500	10,285	12,900	18.400	23,110	26,780	32,430	39,015	46,645	52,760	61,200	70,000

All Dimensions are in Inches

Notes to Specifications

1. Vessel design temperature 400°F/204°C for VT series in accordance with ASME Code, Section VIII, Division 1, current edition, latest addenda.
2. The standard tank supports are designed for use with contents having a maximum 1.8 specific gravity. Consult DDPS where wind and seismic loading must be considered.
3. Hydrostatic test: Tanks are tested at 1.1 times design pressure.
4. Clamps: Mounted on stainless steel retaining cable, complete with yellow zinc plated cap nuts and flat washers.
5. Gaskets: PTFE envelope type with corrugated stainless steel insert, provided for occupied nozzles only.
6. Exterior paint: Zinc-rich, epoxy-bound primer, epoxy enamel finish coat.

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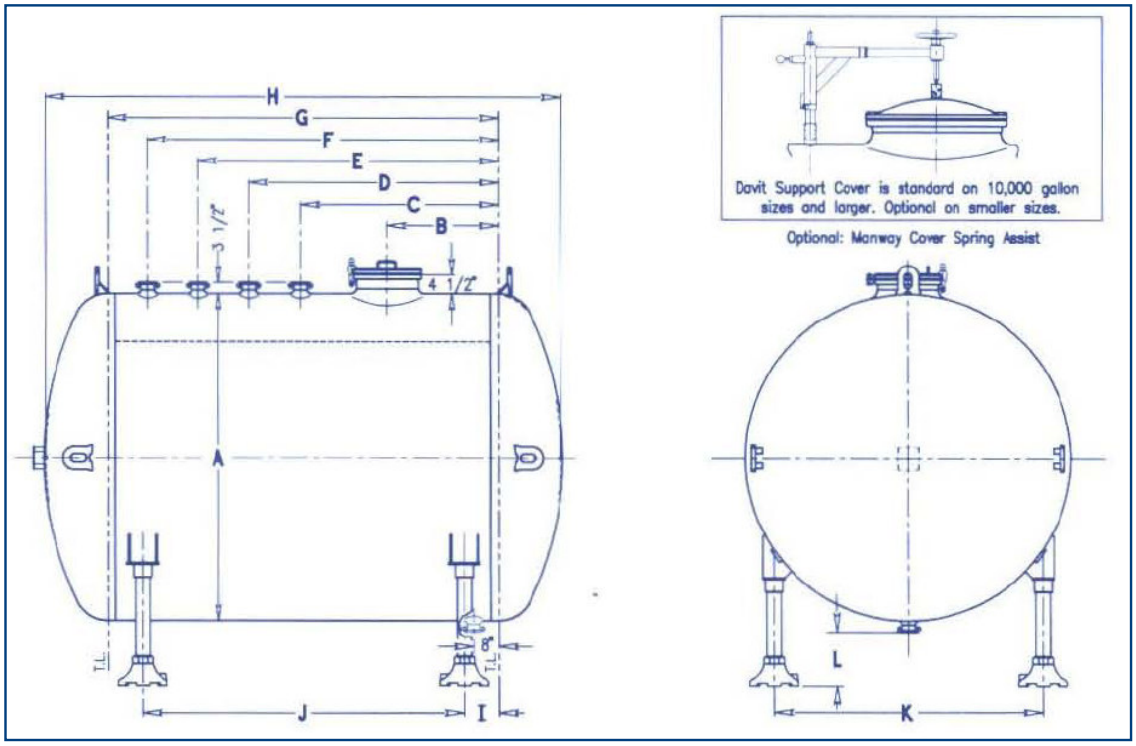
STORAGE TANKS
WITH PIPE LEG SUPPORTS



Horizontal Tanks, Series HT 300 to 3,000 Gallons

Nom. Capacity Gal.	300	500	750	1,000	1,500	2,000	2,500	3,000
Total Capacity Gal.	320	532	836	1,071	1,584	2,096	2,618	3,138
A = Vessel Dia.	40	48	56	63	72	86	86	86
B = Manway from T.L.	18	18	18	18	18	18	18	18
C = Nozzle to T.L.	35	36	39	39	39	39	44	68
D = Nozzle from T.L.	43	44	47	49	49	47	54	78
E = Nozzle from T.L.	-	52	55	59	59	55	64	88
F = Nozzle from T.L.	-	-	63	-	69	-	74	98
G = T.L. to T.L.	54	60	70	68	78	63	84	105
H = Crown to Crown	68.5	78	91	90.5	102	96	117	138
I = Leg to T.L.	7	7	7	8	10	10	10	10
J = Leg to Leg	39.75	45	55	50.5	58	43	64	85
K = Leg to Leg	29	36	44	50	56	70	70	70
L = Btm. nozz. clearance	12	12	12	12	12	12	12	12
Top nozz., No. & Size	(2) - 3"	(3) - 3"	(4) - 3"	(4) - 3"	(4) - 3"	(4) - 3"	(4) - 3"	(4) - 3"
Bottom nozzle, size	3	3	3	3	3	3	3	3
Pressure, PSIG (int.)	45	45	45	45	45	45	45	45
Pressure, Hg (ext.)	FV	FV	FV	FV	FV	FV	FV	FV
Head thickness (min.)	.50	.50	.50	.56	.56	.56	.56	.56
Shell thickness	.50	.50	.50	.50	.50	.50	.50	.50
Weight, lbs. (approx.)	1,700	2,200	2,800	3,600	4,600	5,750	6,650	7,350

All Dimensions are in Inches

Notes to Specifications

1. Vessel design temperature 400°F/204°C for HT series in accordance with ASME Code, Section VIII, Division 1, current edition, latest addenda.
2. Optional saddles are available for contents of specific gravity higher than 1.6. Consult DDPS where wind and seismic loading must be considered.
3. Hydrostatic test: Tanks are tested at 1.1 times design pressure.
4. Clamps: Mounted on stainless steel retaining cable, complete with yellow zinc plated cap nuts and washers.
5. Gaskets: PTFE envelope type with corrugated stainless steel insert, provided for occupied nozzles only.
6. Exterior paint: Zinc-rich, epoxy-bound primer, epoxy enamel finish coat.

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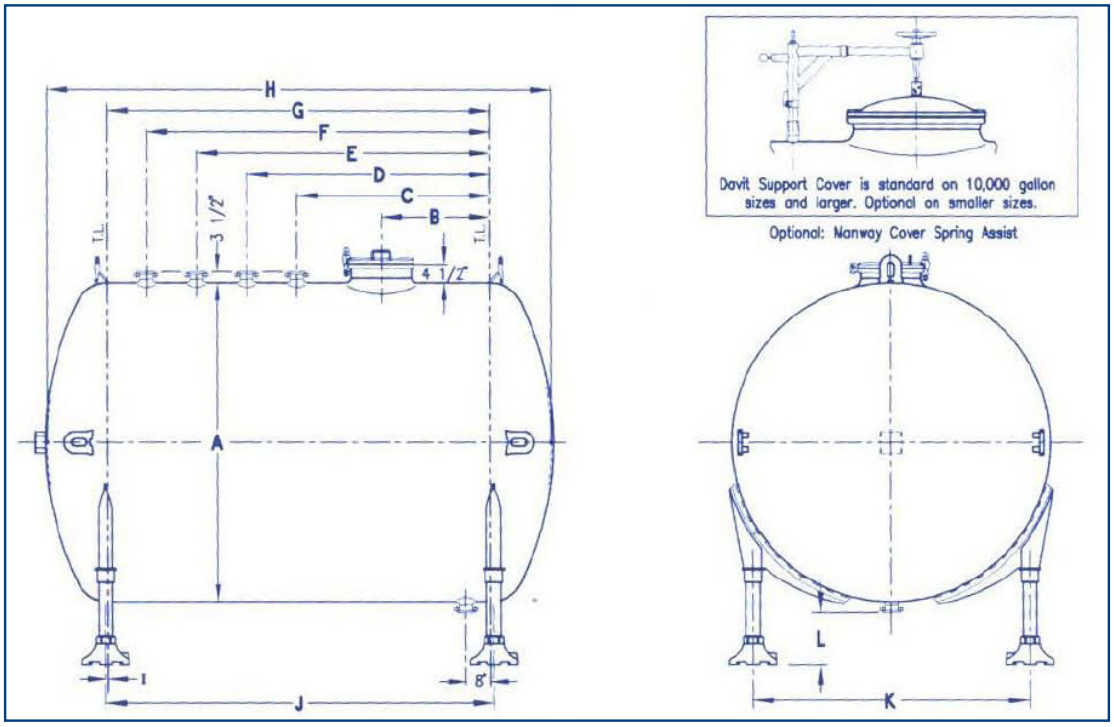
STORAGE TANKS
WITH CRESCENT LEG SUPPORTS



Horizontal Tanks, Series HT 4,000 to 12,500 Gallons

Nom. Capacity Gal.	4,000	5,000	7,500	10,000	12,500
Total Capacity Gal.	4,144	5,158	7,736	10,301	12,912
A = Vessel Dia.	102	102	118	118	118
B = Manway from T.L.	25	35	18	24	24
C = Nozzle to T.L.	49	61	73	129	185
D = Nozzle from T.L.	61	79	91	147	203
E = Nozzle from T.L.	73	97	109	165	221
F = Nozzle from T.L.	85	115	127	183	239
G = T.L. to T.L.	94	126	140.5	196	252.5
H = Crown to Crown	133	162	183	238.5	295
I = Leg to T.L.	1	1	1	1	1
J = Leg to Leg	96	125	140	195	252
K = Leg to Leg	89	89	102	102	102
L = Btm. nozz. clearance	12	12	12	12	12
Top nozz., No. & Size	(4) - 3”	(4) - 3”	(4) - 4”	(3) - 3”	(4) - 4”
Bottom nozzle, size	3	3	4	4	4
Pressure, PSIG (int.)	45	45	45	45	45
Pressure, Hg (ext.)	FV	FV	FV	28.9**	22.7**
Head thickness (min.)	.63	.63	.75	.75	.75
Shell thickness	.63	.63	.63	.75	.75
Weight, lbs. (approx.)	10,285	11,800	17,225	21,275	25,110

All Dimensions are in Inches

Notes to Specifications

1. Vessel design temperature 400°F/204°C for HT series in accordance with ASME Code, Section VIII, Division 1, current edition, latest addenda.
2. Optional saddles are available for contents of specific gravity higher than 2.0. Consult DDPS where wind and seismic loading must be considered.
3. Hydrostatic test: Tanks are tested at 1.1 times design pressure.
4. Clamps: Mounted on stainless steel retaining cable, complete with yellow zinc plated cap nuts and washers.
5. Gaskets: PTFE envelope type with corrugated stainless steel insert, provided for occupied nozzles only.
6. Exterior paint: Zinc-rich, epoxy-bound primer, epoxy enamel finish coat.
7. **Tanks can be designed for FV at 400°F if manway is located in the head.

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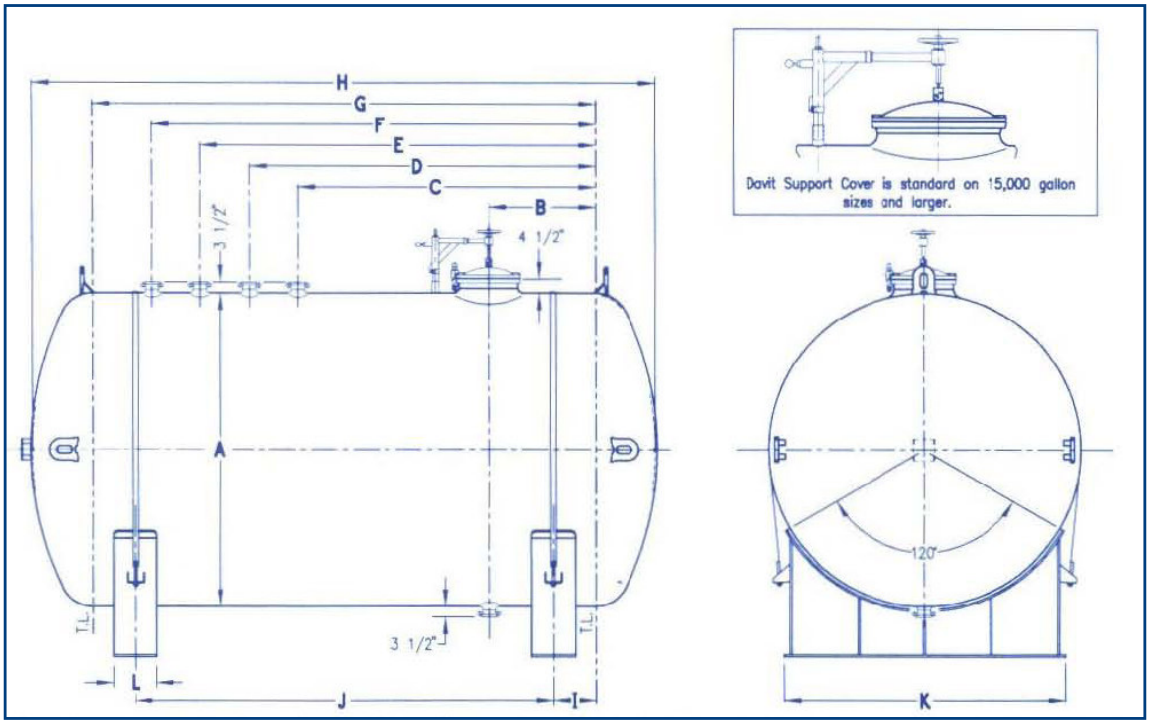
STORAGE TANKS
WITH SADDLE SUPPORTS



Horizontal Tanks, Series HT 15,000 to 35,000 Gallons

Nom. Capacity Gal.	15,000	17,500	20,000	24,000	30,000	35,000
Total Capacity Gal.	15,483	18,031	20,562	24,871	31,902	35,600
A = Vessel Dia.	134	134	142	150	157	162
B = Manway from T.L.	24	24	24	24	24	24
C = Nozzle to T.L.	163	206	210	234	284	284
D = Nozzle from T.L.	181	224	228	252	302	302
E = Nozzle from T.L.	199	242	246	270	320	320
F = Nozzle from T.L.	217	260	264	288	338	338
G = T.L. to T.L.	228	271	274	298	350	369
H = Crown to Crown	279	322	328	355	409	450
I = Leg to T.L.	12	12	12	12	13	13
J = Leg to Leg	204	247	250	273	323	347
K = Leg to Leg	122	122	129	136	148	148
L = Btm. nozz. clearance	14	14	14	15	16	16
Top nozz., No. & Size	(4) - 4"	(4) - 4"	(4) - 4"	(4) - 4"	(4) - 4"	(4) - 4"
Bottom nozzle, size	4	4	4	4	4	4
Pressure, PSIG (int.)	45	45	45	45	45	45
Pressure, Hg (ext.)	27.5	25.2	28.4	26.1	25.8	25.8
Head thickness (min.)	.88	.88	1	1	1	1.13
Shell thickness	.75	.75	.88	.88	1	1.13
Weight, lbs. (approx.)	34,340	38.050	42,270	51,390	66,000	70,000

All Dimensions are in Inches

Notes to Specifications

1. Vessel design temperature 400°F/204°C for HT series in accordance with ASME Code, Section VIII, Division 1, current edition, latest addenda.
2. The standard saddle supports are designed for use with contents having a maximum 1.8 specific gravity. Heavy duty saddle supports will be supplied for a specific gravity higher than 1.8. Consult DDPS where wind and seismic loading must be considered.
3. Hydrostatic test: Tanks are tested at 1.1 times design pressure.
4. Clamps: Mounted on stainless steel retaining cable, complete with yellow zinc plated cap nuts and washers.
5. Gaskets: PTFE envelope type with corrugated stainless steel insert, provided for occupied nozzles only.
6. Exterior paint: Zinc-rich, epoxy-bound primer, epoxy enamel finish coat.
7. **Tanks can be designed for FV at 400°F if manway is located in the head.

De Dietrich Process Systems Glass-Lined Steel Tanks: Special Benefits for Demanding Chemical Service

Protective Coatings

All DDPS tanks are exterior-coated with a cold galvanized, epoxy bound 95% zinc primer. The finish coat is epoxy enamel.

In case of an acid spill, the epoxy-zinc coating offers a degree of galvanic protection of the vessel body from the acid. This feature helps extend the service life of DDPS vessels.

Special protective coatings are available upon request.

Reglassing Service to Save Time and Money

Reglassing of existing equipment can provide substantial savings of time and money.

De Dietrich Process Systems skillfully reglasses major brand tanks, reactors, columns and accessories at our production facility located in Corpus Christi, Texas.

All-electric glassing furnaces are employed, including the world's most modern, programmable heated glassing furnaces.

Handling and Rigging

The proper care and handling of glass-lined steel process equipment is always a concern to plant operations. Whether a contractor or plant personnel are used to install the glass-lined equipment, certain logical precautions should be carefully observed during unloading, rigging, general handling and installation.

All specifications in this bulletin refer to equipment supplied by De Dietrich Process Systems. In accordance with our policy of constant product improvement, specifications are subject to change without notice.

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De Dietrich PROCESS SYSTEMS