STEEL SADDLES FOR VESSEL

VESSEL STANDARD

VS-14-0

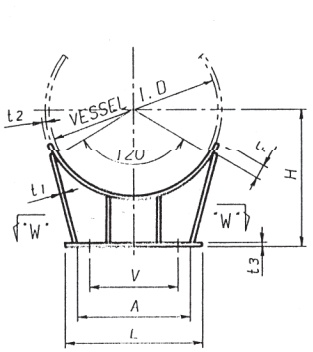
DIMENSION 'S'

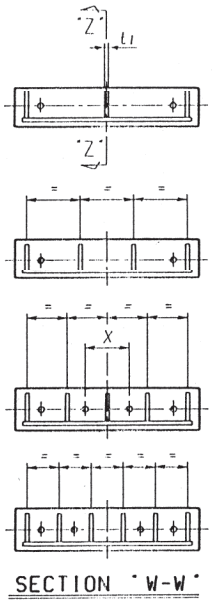
SADDLE SPAN (L1)	MAX. TEMP. DIFFERENCE (TEMP. DIFF. = I OPE. TEMP. −25° C I)						
	50° C	100° C	150° C	200° C	250° C	300° C	325° C
2000	10 (45)		20 (45)		30 (45)		
3000							
4000							
5000							
6000							
7000	20 (45)		30 (45)		45 (55)		60 (70)
8000							
9000							
10000			45 (55)	60 (70)			75 (85)
12000					75(85)	95 (105)	
15000							

DIMENSION 'S' IN ( ) SHALL BE USED FOR FOUNDATION BOLT TYPE I-b IN VS-20-1 ⚠1

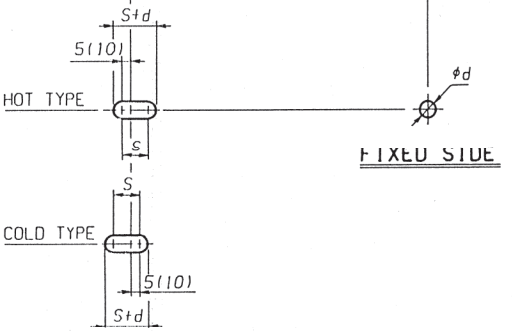
TABLE STEEL SADDLES FOR VESSEL

VESSEL I.D.	SADDLE						SADDLE PAD				BASE PLATE & SLIDING PLATE				BOLT					NO. RIB	MAX. OPE LOAD (KN)	MAX. HYDRO TEST LOAD (KN)
	A	B	C	H	t1	D	t2	E	F	G	L	W	t3	t4	V	X	NO. REQD	d	BOLT SIZE			
1000	510	140	270	750	6	134	6	310	30	90	570	170	12	9	430	0	2	23	M20	1	235	863
1100	560	140	270	800	6	134	6	310	30	90	620	170	12	9	480	0	2	23	M20	1	235	921
1200	610	140	270	850	9	131	9	330	50	100	670	170	16	9	510	0	2	23	M20	1	657	1382
1300	660	160	310	900	9	151	9	370	50	110	730	190	16	9	560	0	2	23	M20	1	706	1471
1400	710	160	310	950	9	151	9	370	50	110	780	190	16	9	610	0	2	23	M20	1	774	1539
1500	760	180	340	1000	9	171	9	400	50	120	830	210	16	9	660	0	2	27	M24	2	912	1614
1600	810	180	340	1050	9	171	9	400	50	120	880	210	16	9	710	0	2	27	M24	2	921	1863
1700	860	180	340	1100	9	171	9	400	50	120	930	210	16	9	760	0	2	27	M24	2	931	1922
1800	910	180	340	1150	9	171	9	400	50	120	980	210	16	9	810	0	2	27	M24	2	951	1990
1900	960	180	370	1200	9	171	9	430	50	120	1030	210	16	9	860	0	2	27	M24	2	961	2059
2000	1110	180	370	1250	9	171	9	450	50	130	1210	220	19	9	1000	0	2	27	M24	2	1000	2706
2200	1170	180	370	1350	9	171	9	450	50	130	1270	220	19	9	1060	0	2	27	M24	2	1010	2804
2400	1210	200	420	1450	9	191	9	500	50	140	1310	240	19	9	1100	0	2	27	M24	2	1020	2873
2600	1310	200	420	1550	9	191	9	500	50	140	1410	240	19	9	1200	0	2	27	M24	2	1039	3040
2800	1410	220	460	1650	9	211	9	540	50	150	1510	260	19	9	1300	0	2	27	M24	2	1049	3128
3000	1520	220	480	1750	9	211	9	560	50	150	1620	260	19	12	1410	650	4	35	M30	3	1275	3599
3200	1610	220	480	1850	9	211	9	560	50	150	1710	260	19	12	1500	690	4	35	M30	3	1294	3746
3400	1710	220	500	1950	9	211	9	580	50	150	1810	260	19	12	1600	740	4	35	M30	3	1304	3903
3600	2080	220	500	2050	12	208	12	600	50	160	2200	270	22	12	1950	900	4	35	M30	3	2834	5893
3800	2210	250	550	2150	12	238	12	650	50	175	2330	300	22	12	2080	970	4	35	M30	3	2883	6148
4000	2210	250	600	2250	12	238	12	700	50	175	2330	300	22	12	2080	970	4	35	M30	3	2883	6148
4200	2210	250	600	2350	12	238	12	700	50	175	2330	300	22	12	2080	970	4	35	M30	3	2883	6148
4400	2260	280	650	2450	12	268	12	750	50	190	2380	330	22	12	2130	990	4	35	M30	3	2902	6247
4600	2370	280	650	2550	12	268	12	750	50	190	2490	330	22	12	2240	1050	4	35	M30	3	2932	6462
4800	2730	280	650	2650	12	268	12	750	50	190	2850	330	22	12	2590	1490	4	35	M30	4	3491	7521
5000	2730	280	650	2750	12	268	12	750	50	190	2850	330	22	16	2590	1490	4	41	M36	4	3491	7521
5200	3210	300	700	2850	16	284	16	800	70	200	3350	350	25	16	3050	1750	4	41	M36	4	7325	10326
5400	3310	300	700	2950	16	284	16	800	70	200	3450	350	25	16	3150	1810	4	41	M36	4	7394	10542
5600	3370	320	750	3050	16	314	16	850	70	215	3610	380	25	16	3210	1860	4	41	M36	4	7433	10591
5800	3360	330	750	3150	16	314	16	850	70	215	3500	380	25	16	3200	1840	4	41	M36	4	7433	10660
6000	3360	330	800	3250	16	314	16	900	70	215	3500	380	25	16	3200	1840	4	41	M36	4	7443	10660



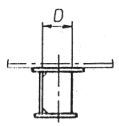


SECTION 'W-W'

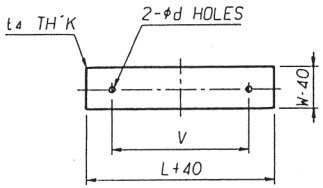


FIXED SIDE

SLIDING SIDE



SECTION 'Z-Z'



SLIDING PLATE

REMARKS:

1. ALL DIMENSIONS ARE IN MM.
2. FILLET WELD OF SADDLE SHALL BE CONTINUOUS.
3. FOR MATERIAL, SEE ENG'G DWG.
4. MAX. SEISMIC COEFFICIENT FOR VESSELS SHALL BE 0.2
5. ONE TELL-TALE φ6 HOLE SHALL BE PROVIDED AT THE LOWEST POINT OF PAD.
6. THIS SADDLE STANDARD SHALL NOT BE USE FOR SHELL AND TUBE TYPE HEAT EXCHANGERS.
7. FOR VESSELS OF INSIDE DIAMETER LESS THAN 1000, VS-15 SHALL BE APPLIED.

JOB REQ'T REV. 1 APPROVED:

STEEL SADDLES FOR HEAT EXCHANGER

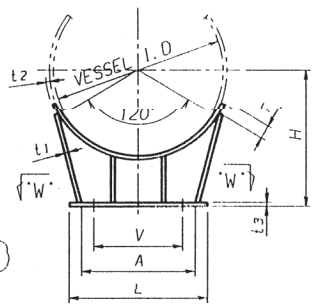
VESSEL STANDARD VS-15-0

DIMENSION 'S'

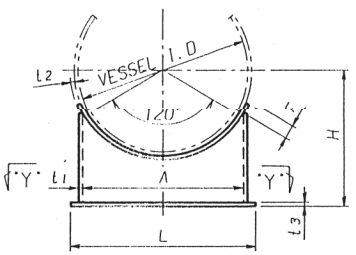
SADDLE SPAN (L1)	MAX. TEMP. DIFFERENCE (TEMP. DIFF. = I OPE. TEMP. − 25°C I)						
	50°C	100°C	150°C	200°C	250°C	300°C	325°C
2000	10 (45)		20 (45)		30 (45)		
3000							
4000							
5000							
6000							
7000	20 (45)		30 (45)		45 (55)		60 (70)
8000							
9000							
10000							
12000			45 (55)	60 (70)	75(85)		75 (85)
15000							95 (105)

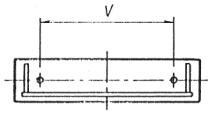
DIMENSION 'S' IN ( ) SHALL BE USED FOR FOUNDATION BOLT TYPE I-b IN VS-20-1 ⚠

TYPE B

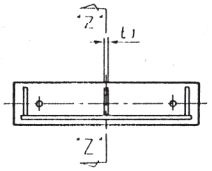


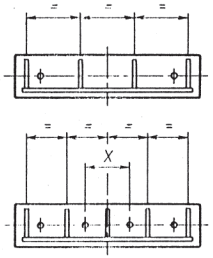
TYPE A

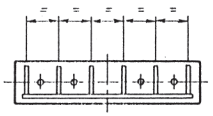




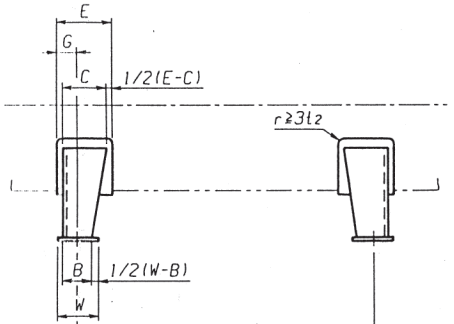
SECTION 'Y-Y'

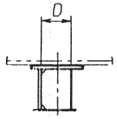






SECTION 'W-W'





SECTION 'Z-Z'

TABLE STEEL SADDLES FOR HEAT EXCHANGER

VESSEL I.D.	SADDLE						SADDLE PAD				BASE PLATE & SLIDING PLATE				BOLT					NO. RIB	MAX. OPE LOAD (KN)	MAX. HYDRO TEST LOAD (KN)	SAD TYPE
	A	B	C	H	t1	D	t2	E	F	G	L	W	t3	t4	V	X	NO. REQD	d	BOLT SIZE				
200	180	90	160	350	6	0	6	200	30	65	210	110	12	6	100	0	2	19	M16	0	58	358	A
300	270	90	160	400	6	0	6	200	30	65	300	110	12	6	190	0	2	19	M16	0	68	441	A
350	300	90	160	400	6	0	6	200	30	65	330	110	12	6	220	0	2	19	M16	0	68	470	A
400	350	90	160	450	6	0	6	200	30	65	380	110	12	6	270	0	2	19	M16	0	68	470	A
450	390	90	160	450	6	0	6	200	30	65	420	110	12	6	310	0	2	19	M16	0	68	470	A
500	430	100	190	500	9	0	9	250	30	80	490	130	12	6	340	0	2	19	M16	0	127	735	A
550	430	100	190	500	9	0	9	250	30	80	490	130	12	6	340	0	2	19	M16	0	147	735	B
600	430	100	190	550	9	0	9	250	30	80	490	130	12	6	340	0	2	19	M16	0	127	735	B
650	430	120	220	550	9	0	9	280	30	90	490	150	12	6	340	0	2	19	M16	0	205	274	B
700	460	120	220	600	9	0	9	280	30	90	520	150	12	6	370	0	2	19	M16	0	186	804	B
750	460	120	220	600	9	0	9	280	30	90	520	150	12	6	370	0	2	19	M16	0	205	804	B
800	460	120	220	650	9	0	9	280	30	90	520	150	12	6	370	0	2	19	M16	0	186	804	B
850	500	120	220	650	9	111	9	280	30	90	560	150	12	6	410	0	2	19	M16	1	264	990	B
900	500	120	240	700	9	111	9	300	30	90	560	150	12	6	410	0	2	19	M16	1	264	990	B
950	500	120	240	700	9	111	9	300	30	90	560	150	12	6	410	0	2	23	M20	1	304	990	B
1000	510	140	270	750	9	131	9	330	30	100	570	170	12	9	420	0	2	23	M20	1	262	1068	B
1100	560	140	270	800	9	131	9	330	30	100	620	170	12	9	470	0	2	23	M20	1	372	1127	B
1200	610	140	270	850	12	128	12	350	50	110	680	170	16	9	500	0	2	27	M24	1	490	1451	B
1300	720	160	310	900	12	148	12	390	50	120	800	190	16	9	610	0	2	27	M24	1	608	1696	B
1400	720	160	310	950	12	148	12	390	50	120	800	190	16	9	610	0	2	27	M24	1	608	1696	B
1500	860	180	340	1000	12	168	12	420	50	130	940	210	16	9	750	0	2	35	M30	2	970	2226	B
1600	900	180	340	1050	12	168	12	420	50	130	980	210	16	9	790	0	2	35	M30	2	970	2284	B
1700	950	180	340	1100	12	168	12	420	50	130	1030	210	16	9	840	0	2	35	M30	2	970	2353	B
1800	1000	180	340	1150	12	168	12	420	50	130	1080	210	16	9	890	0	2	35	M30	2	970	2422	B
1900	1050	180	370	1200	12	168	12	450	50	130	1130	210	16	9	940	0	2	35	M30	2	970	2471	B
2000	1120	180	370	1250	16	164	16	470	50	140	1230	220	19	9	990	0	2	41	M36	2	1422	3236	B
2200	1210	180	370	1350	16	164	16	470	50	140	1320	220	19	9	1080	0	2	41	M36	2	1422	3393	B
2400	1300	200	420	1450	16	184	16	520	50	150	1420	240	19	9	1250	0	2	47	M42	2	1704	3844	B
2600	1460	200	420	1550	16	184	16	520	50	150	1570	240	19	9	1330	0	2	47	M42	2	1814	3991	B
2800	1620	220	460	1650	19	201	19	560	70	160	1730	260	22	9	1480	0	2	54	M48	2	2569	4942	B
3000	1770	220	480	1750	19	201	19	580	70	160	1880	260	22	12	1640	740	4	54	M48	3	2843	5648	B
3200	1870	220	480	1850	19	201	19	580	70	160	1980	260	22	12	1740	790	4	54	M48	3	2843	5854	B
3400	2000	220	500	1950	19	201	19	600	70	160	2110	260	22	12	1870	860	4	54	M48	3	2843	6119	B
3600	2080	220	500	2050	22	198	22	600	70	160	2210	270	25	12	1940	890	4	54	M48	3	3706	7306	B
3800	2270	250	550	2150	22	228	22	650	70	175	2400	300	25	12	2120	970	4	54	M48	3	4118	7884	B
4000	2380	250	600	2250	22	228	22	700	70	175	2510	300	25	12	2230	1030	4	54	M48	3	4158	8129	B
4200	2490	250	600	2350	22	228	22	700	70	175	2620	300	25	12	2340	1080	4	54	M48	3	4805	8620	B
4400	2700	280	650	2450	22	258	22	750	70	190	2830	330	25	12	2530	1170	4	54	M48	3	5148	9198	B
4600	2810	280	650	2550	22	258	22	750	90	190	2950	330	28	12	2630	1210	4	62	M56	3	6001	10346	B
4800	3220	280	650	2650	22	258	22	750	90	190	3360	330	28	12	3020	1720	4	62	M56	4	7119	12013	B
5000	3260	280	650	2750	22	258	22	750	90	190	3400	330	28	16	3060	1750	4	62	M56	4	7119	12111	B
5200	3790	300	700	2850	22	278	22	800	90	200	3950	350	28	16	3590	2070	4	71	M64	4	8286	13729	B
5400	3840	300	700	2950	22	278	22	800	90	200	4000	350	28	16	3640	2100	4	71	M64	4	8306	13856	B
5600	4700	330	750	3050	25	305	25	850	90	215	4860	380	32	16	4470	2580	4	71	M64	4	9394	18191	B
5800	4750	330	750	3150	25	305	25	850	90	215	4910	380	32	16	4520	2610	4	71	M64	4	9394	18328	B
6000	4800	330	800	3250	25	305	25	900	90	215	4960	380	32	16	4570	2640	4	71	M64	4	9394	18269	B

REMARKS:

1. ALL DIMENSIONS ARE IN MM.
2. FILLET WELD OF SADDLE SHALL BE CONTINUOUS.
3. FOR MATERIAL, SEE ENG'G DWG.
4. MAX. SEISMIC COEFFICIENT FOR HEAT EXCHANGERS SHALL BE 0.2
5. ONE TELL-TALE φ6 HOLE SHALL BE PROVIDED AT THE LOWEST POINT OF PAD.

JOB REQ'T REV. 1 APPROVED: