

VOI-SHAN MANUFACTURING COMPANY

A DIVISION OF VOI-SHAN INDUSTRIES, INC.



DASH NO.	COUPLING ASSEMBLY	WEIGHT SAVING	VSF1003 INSERT FL'D.	VSF1004 SLEEVE 2 REQ'D.	VSF1000 NUT	VSF1001 CPLG.	VSF1002 INSERT FL'S.	MS21922 SLEEVE 2 REQ'D.	MS21921 NUT 2 REQ'D.	MS21902 UNION FL'S.	AN818 NUT 2 REQ'D.	AN815 UNION FL'D.	AN819 SLEEVE 2 REQ'D.	ASSY. TOTAL WEIGHT
4	SCOTT FL'S.	10%			.017	.009	.004	.003						.036
4	MS FL'S.							.003	.010	.014				.040
4	SCOTT FL'D.	11%	.004	.001	.017	.009								.032
4	AN FL'D.										.009	.016	.001	.036
5	SCOTT FL'S.	12%			.020	.011	.005	.005						.046
5	AMS FL'S.							.005	.013	.016				.052
5	SCOTT FL'D.	7%	.004	.002	.020	.011								.039
5	AN FL'D.										.011	.018	.001	.042
6	SCOTT FL'S.	14%			.026	.016	.007	.006						.061
6	MS FL'S.							.006	.016	.023				.071
6	SCOTT FL'D.	2%	.009	.002	.026	.016								.055
6	AN FL'D.										.013	.026	.002	.056
8	SCOTT FL'S.	25%			.031	.021	.010	.011						.084
8	MS FL'S.							.011	.025	.040				.112
8	SCOTT FL'D.	32%	.011	.003	.031	.021								.069
8	AN FL'D.										.022	.048	.005	.102
10	SCOTT FL'S.	30%			.039	.023	.015	.015						.107
10	MS FL'S.							.015	.033	.057				.153
10	SCOTT FL'D.	40%	.015	.005	.039	.023								.089
10	AN FL'D.										.032	.073	.006	.149
12	SCOTT FL'S.	40%			.051	.034	.024	.020						.149
12	MS FL'S.							.020	.058	.095				.251
12	SCOTT FL'D.	52%	.025	.007	.051	.034								.124
12	AN FL'D.										.056	.127	.010	.259
16	SCOTT FL'S.	41%			.066	.044	.036	.026						.198
16	MS FL'S.							.026	.079	.125				.335
16	SCOTT FL'D.	54%	.033	.010	.066	.044								.163
16	AN FL'D.										.077	.167	.018	.357
20	SCOTT FL'S.	54%			.090	.064	.047	.036						.273
20	MS FL'S.							.036	.172	.178				.594
20	SCOTT FL'D.	64%	.055	.015	.090	.064								.239
20	AN FL'D.										.181	.238	.031	.662
24	SCOTT FL'S.	53%			.104	.066	.061	.041						.313
24	MS FL'S.							.041	.192	.205				.671
24	SCOTT FL'D.	70%	.069	.019	.104	.066								.277
24	AN FL'D.										.234	.348	.048	.912
28	SCOTT FL'D.	68%	.115	.026	.154	.105								.426
28	AN FL'D.										.334	.530	.066	1.330
32	SCOTT FL'S.	56%			.177	.114	.100	.056						.503
32	MS FL'S.							.056	.325	.382				1.144
32	SCOTT FL'D.	75%	.130	.031	.177	.114								.483
32	AN FL'D.										.494	.750	.088	1.914

WEIGHT COMPARISON—AN, MS AND SCOTT COUPLINGS

- NOTE:
1. FL'S. - FLARELESS, FL'D. - FLARED, V-S - VOI-SHAN
 2. MATERIAL ALUMINUM ALLOY
 3. WEIGHTS SHOWN IN LBS.

APPROVED DATE 16 March 1959	TITLE <i>WEIGHT STUDY CHART</i>	STANDARD <i>VSF-WS1</i>
LATEST REVISION DATE 22 September 1959	SHEET 1 OF 1	

VOI-SHAN MANUFACTURING COMPANY
A DIVISION OF VOI-SHAN INDUSTRIES, INC.



DASH NO.	ELBOW ASSEMBLY	WEIGHT SAVING	VSF1008 ELBOW FL'D.	VSF1004 SLEEVE 2 REQ'D.	VSF1013 NUT 2 REQ'D.	VSF1007 ELBOW FL'S.	MS21922 SLEEVE 2 REQ'D.	MS21921 NUT 2 REQ'D.	MS21904 ELBOW FL'S.	AN819 SLEEVE 2 REQ'D.	AN818 NUT 2 REQ'D.	AN821 ELBOW FL'D.	ASSY. TOTAL WEIGHT
4	V-S FL'S.	21 %			.007	.018	.003						.038
4	MS FL'S.						.003	.010	.022				.048
4	V-S FL'D.	21 %	.014	.001	.007								.030
4	AN FL'D.									.001	.009	.018	.038
5	V-S FL'S.	27 %			.007	.025	.005						.049
5	MS FL'S.						.005	.013	.031				.067
5	V-S FL'D.	29 %	.018	.002	.007								.034
5	AN FL'D.									.001	.011	.024	.048
6	V-S FL'S.	28 %			.009	.028	.006						.058
6	MS FL'S.						.006	.016	.037				.081
6	V-S FL'D.	25 %	.023	.002	.009								.045
6	AN FL'D.									.002	.013	.030	.060
8	V-S FL'S.	26 %			.015	.049	.011						.101
8	MS FL'S.						.011	.025	.064				.136
8	V-S FL'D.	24 %	.053	.008	.015								.091
8	AN FL'D.									.005	.022	.065	.119
10	V-S FL'S.	27 %			.019	.066	.015						.134
10	MS FL'S.						.015	.033	.087				.183
10	V-S FL'D.	28 %	.079	.005	.019								.127
10	AN FL'D.									.006	.032	.101	.177
12	V-S FL'S.	27 %			.032	.110	.020						.214
12	MS FL'S.						.020	.058	.135				.291
12	V-S FL'D.	29 %	.126	.007	.032								.206
12	AN FL'D.									.010	.056	.156	.288
16	V-S FL'S.	27 %			.043	.160	.026						.298
16	MS FL'S.						.026	.079	.200				.410
16	V-S FL'D.	29 %	.193	.010	.043								.301
16	AN FL'D.									.018	.077	.234	.424
20	V-S FL'S.	41 %			.052	.225	.036						.401
20	MS FL'S.						.036	.172	.265				.681
20	V-S FL'D.	42 %	.343	.015	.052								.485
20	AN FL'D.									.031	.181	.415	.839
24	V-S FL'S.	28 %			.069	.511	.041						.731
24	MS FL'S.						.041	.192	.544				1.010
24	V-S FL'D.	44 %	.427	.019	.069								.619
24	AN FL'D.									.048	.234	.546	1.110
28	V-S FL'D.	47 %	.504	.031	.117								.828
28	AN FL'D.									.066	.334	.768	1.568
32	V-S FL'S.	27 %			.122	.948	.056						1.304
32	MS FL'S.						.056	.352	1.020				1.782
32	V-S FL'D.	53 %	.649	.031	.122								1.009
32	AN FL'D.									.088	.494	.998	2.162

WEIGHT COMPARISON—AN, MS AND VOI-SHAN LIGHTWEIGHT ELBOWS

- NOTE: 1. FL'S. - FLARELESS, FL'D. - FLARED, V-S - VOI-SHAN
 2. MATERIAL - ALUMINUM ALLOY
 3. WEIGHTS SHOWN IN LBS.

APPROVED DATE 9 June 1959	TITLE <i>WEIGHT STUDY CHART</i>	STANDARD
LATEST REVISION DATE 22 September 1959		<i>VSF-WS2</i> SHEET / OF /

VOI-SHAN MANUFACTURING COMPANY

A DIVISION OF VOI-SHAN INDUSTRIES, INC.



DASH NO.	TEE ASSEMBLY	WEIGHT SAVING	VSF1010 TEE FL'D.	VSF1004 SLEEVE 3 REQ'D.	VSF1013 NUT 3 REQ'D.	VSF1009 TEE FL'S.	MS21922 SLEEVE 3 REQ'D.	MS21921 NUT 3 REQ'D.	MS21905 TEE FL'S.	AN819 SLEEVE 3 REQ'D.	AN818 NUT 3 REQ'D.	AN824 TEE FL'D.	ASS'Y. TOTAL WEIGHT
4	V-S FL'S.	26%			.007	.017	.003						.047
4	MS FL'S.						.003	.010	.024				.063
4	V-S FL'D.	22%	.018	.001	.007								.042
4	AN FL'D.									.001	.009	.024	.054
5	V-S FL'S.	31%			.007	.025	.005						.061
5	MS FL'S.						.005	.013	.035				.089
5	V-S FL'D.	29%	.026	.002	.007								.050
5	AN FL'D.									.001	.011	.034	.070
6	V-S FL'S.	32%			.009	.029	.006						.109
6	MS FL'S.						.006	.016	.043				.133
6	V-S FL'D.	23%	.040	.002	.009								.073
6	AN FL'D.									.002	.013	.050	.095
8	V-S FL'S.	28%			.015	.060	.011						.174
8	MS FL'S.						.011	.025	.083				.191
8	V-S FL'D.	24%	.076	.003	.015								.133
8	AN FL'D.									.005	.022	.095	.176
10	V-S FL'S.	28%			.019	.088	.015						.190
10	MS FL'S.						.015	.033	.120				.264
10	V-S FL'D.	30%	.102	.005	.019								.174
10	AN FL'D.									.006	.032	.135	.249
12	V-S FL'S.	27%			.032	.157	.020						.313
12	MS FL'S.						.020	.058	.195				.429
12	VS FL'D.	30%	.171	.007	.032								.291
12	AN FL'D.									.010	.056	.216	.414
16	V-S FL'S.	28%			.043	.235	.026						.442
16	MS FL'S.						.026	.079	.296				.611
16	V-S FL'D.	32%	.234	.010	.043								.396
16	AN FL'D.									.018	.077	.295	.580
20	V-S FL'S.	38%			.052	.424	.036						.688
20	MS FL'S.						.036	.172	.485				1.109
20	V-S FL'D.	46%	.403	.015	.052								.616
20	AN FL'D.									.031	.181	.510	1.146
24	V-S FL'S.	30%			.069	.647	.041						.977
24	MS FL'S.						.041	.192	.697				1.396
24	V-S FL'D.	49%	.492	.019	.069								.780
24	AN FL'D.									.048	.234	.670	1.516
28	V-S FL'D.	52%	.524	.026	.117								1.010
28	AN FL'D.									.066	.334	.920	2.120
32	V-S FL'S.	25%			.122	1.593	.056						2.127
32	MS FL'S.							.056	.352	1.701			2.844
32	V-S FL'D.	61%	.547	.031	.122								1.087
32	AN FL'D.									.088	.494	1.070	2.816

WEIGHT COMPARISON — AN, MS AND VOI-SHAN LIGHTWEIGHT TEES

- NOTE: 1. FL'S. - FLARELESS, FL'D. - FLARED, V-S - VOI-SHAN
 2. MATERIAL - ALUMINUM ALLOY
 3. WEIGHTS SHOWN IN LBS.

APPROVED DATE 9 June 1959	TITLE <h2 style="margin: 0;">WEIGHT STUDY CHART</h2>	STANDARD <h1 style="margin: 0; font-family: cursive;">VSF-WS3</h1>
LATEST REVISION DATE 22 September 1959	SHEET / OF /	

VOI-SHAN MANUFACTURING COMPANY

A DIVISION OF VOI-SHAN INDUSTRIES, INC.



DASH NO.	CROSS ASSEMBLY	WEIGHT SAVING	VSF1012 CROSS FL'D.	VSF1004 SLEEVE 4 REQ'D.	VSF1013 NUT 4 REQ'D.	VSF1011 CROSS FL'S.	MS21922 SLEEVE 4 REQ'D.	MS21921 NUT 4 REQ'D.	MS21906 CROSS FL'S.	AN819 SLEEVE 4 REQ'D.	AN818 NUT 4 REQ'D.	AN827 CROSS FL'D.	ASS'Y. TOTAL WEIGHT
4	V-S FL'S.	26%			.007	.021	.003						.061
4	MS FL'S.						.003	.010	.030				.082
4	V-S FL'D.	20%	.032	.001	.007								.064
4	AN FL'D.									.001	.009	.040	.080
5	V-S FL'S.	32%			.007	.032	.005						.080
5	MS FL'S.						.005	.013	.045				.117
5	V-S FL'D.	30%	.032	.002	.007								.064
5	AN FL'D.									.001	.011	.043	.091
6	V-S FL'S.	32%			.009	.037	.006						.097
6	MS FL'S.						.006	.016	.055				.143
6	V-S FL'D.	27%	.040	.002	.009								.084
6	AN FL'D.									.002	.013	.055	.115
8	V-S FL'S.	27%			.015	.085	.011						.189
8	MS FL'S.						.011	.025	.115				.259
8	V-S FL'D.	26%	.090	.003	.015								.166
8	AN FL'D.									.005	.022	.115	.223
10	V-S FL'S.	28%			.019	.118	.015						.254
10	MS FL'S.						.015	.033	.160				.352
10	V-S FL'D.	30%	.132	.005	.019								.228
10	AN FL'D.									.006	.032	.176	.328
12	V-S FL'S.	28%			.032	.190	.020						.398
12	MS FL'S.						.020	.058	.240				.552
12	V-S FL'D.	30%	.219	.007	.032								.379
12	AN FL'D.									.010	.056	.280	.544
16	V-S FL'S.	28%			.043	.304	.026						.580
16	MS FL'S.						.026	.079	.385				.805
16	V-S FL'D.	32%	.303	.010	.043								.519
16	AN FL'D.									.018	.077	.385	.765
20	V-S FL'S.	37%			.052	.608	.036						.960
20	MS FL'S.						.036	.172	.689				1.521
20	V-S FL'D.	47%	.506	.015	.052								.790
20	AN FL'D.									.031	.181	.650	1.498
24	V-S FL'S.	32%			.069	.765	.041						1.205
24	MS FL'S.						.041	.192	.832				1.764
24	V-S FL'D.	49%	.657	.019	.069								1.041
24	AN FL'D.									.048	.234	.895	2.023
28	V-S FL'D.	45%	1.162	.026	.177								1.810
28	AN FL'D.									.066	.334	1.690	3.290
32	V-S FL'S.	27%			.122	1.884	.056						2.596
32	MS FL'S.						.056	.352	2.029				3.553
32	V-S FL'D.	52%	1.402	.031	.122								2.122
32	AN FL'D.									.088	.494	2.100	4.428

WEIGHT COMPARISON—AN, MS AND VOI-SHAN LIGHTWEIGHT CROSSES

- NOTE: 1. FL'S. - FLARELESS, FL'D. - FLARED, V-S - VOI-SHAN
 2. MATERIAL - ALUMINUM ALLOY
 3. WEIGHTS SHOWN IN LBS

APPROVED DATE 9 June 1959	TITLE <i>WEIGHT STUDY CHART</i>	STANDARD <i>VSF-WS4</i>
LATEST REVISION DATE 22 September 1959	SHEET / OF /	