Table 11. **Factors Used when Constructing Control Charts**.

NUMBER OF OBSERVATIONS IN SAMPLE	CHART FOR AVERAGES			CHART FOR STANDARD DEVIATIONS					
	FACTORS FOR CONTROL LIMITS			FACTORS FOR CENTRAL LINE		FACTORS FOR CONTROL LIMITS			
n	A	A_1	A_2	C_2	$1/C_2$	B_1	B_2	B_3	B_4
2	2.121	3.760	1.880	.5642	1.7725	0	1.843	0	3.267
3	1.732	2.394	1.023	.7236	1.3820	0	1.858	0	2.568
4	1.501	1.880	.729	.7979	1.2533	0	1.808	0	2.266
5	1.342	1.596	.577	.8407	1.1894	0	1.756	0	2.089
6	1.225	1.410	.483	.8686	1.1512	.026	1.711	.030	1.970
7	1.134	1.277	.419	.8882	1.1259	.105	1.672	.118	1.882
8	1.061	1.175	.373	.9027	1.1078	.167	1.638	.185	1.815
9	1.000	1.094	.337	.9139	1.0942	.219	1.609	.239	1.761
10	.949	1.028	.308	.9227	1.0837	.262	1.584	.284	1.716
11	.905	.973	.285	.9300	1.0753	.299	1.561	.321	1.679
12	.866	.925	.266	.9359	1.0684	.331	1.541	.354	1.646
13	.832	.884	.249	.9410	1.0627	.359	1.523	.382	1.618
14	.802	.848	.235	.9453	1.0579	.384	1.507	.406	1.594
15	.775	.816	.223	.9490	1.0537	.406	1.492	.428	1.572
16	.750	.788	.212	.9523	1.0501	.427	1.478	.448	1.552
17	.728	.762	.203	.9551	1.0470	.445	1.465	.466	1.534
18	.707	.738	.194	.9576	1.0442	.461	1.454	.482	1.518
19	.688	.717	.187	.9599	1.0418	.477	1.443	.497	1.503
20	.671	.697	.180	.9619	1.0396	.491	1.433	.510	1.490
21	.655	.679	.173	.9638	1.0376	.504	1.424	.523	1.477
22	.640	.662	.167	.9655	1.0358	.516	1.415	.534	1.466
23	.626	.647	.162	.9670	1.0342	.527	1.407	.545	1.455
24	.612	.632	.157	.9684	1.0327	.538	1.399	.555	1.445
25	.600	.619	.153	.9696	1.0313	.548	1.392	.565	1.435
Over 25	$\frac{3}{\sqrt{n}}$	$\frac{3}{\sqrt{n}}$				a	b	a	b

$a = 1-\frac{3}{\sqrt{2n}}$, $b = 1+\frac{3}{\sqrt{2n}}$.

(*continued*)

Continued.

NUMBER OF OBSERVATIONS IN SAMPLE	CHART ROR RANGES						
	FACTORS FOR CENTRAL LINE		FACTORS FOR CONTROL LIMITS				
n	d_2	$1/d_2$	d_3	D_1	D_2	D_3	D_4
2	1.128	.8865	.853	0	3.686	0	3.276
3	1.693	.5907	.888	0	4.358	0	2.575
4	2.059	.4857	.880	0	4.698	0	2.282
5	2.326	.4299	.864	0	4.918	0	2.115
6	2.534	.3946	.848	0	5.078	0	2.004
7	2.704	.3698	.833	.205	5.203	.076	1.924
8	2.847	.3512	.820	.387	5.307	.136	1.864
9	2.970	.3367	.808	.546	5.394	.184	1.816
10	3.078	.3249	.797	.687	5.469	.223	1.777
11	3.173	.3152	.787	812	5.534	.256	1.744
12	3.258	.3069	.778	.924	5.592	.284	1.719
13	3.336	.2998	.770	1.026	5.646	.308	1.692
14	3.407	.2935	.762	1.121	5.693	.329	1.671
15	3.472	.2880	.755	1.207	5.737	.348	1.652
16	3.532	.2831	.749	1.285	5.779	.364	1.636
17	3.588	.2787	.743	1.359	5.817	.379	1.621
18	3.640	.2747	.738	1.426	5.854	.392	1.608
19	3.689	.2711	.733	1.490	5.888	.404	1.596
20	3.735	.2677	.729	1.548	5.922	.414	1.586
21	3.778	.2647	.724	1.606	5.950	.425	1.575
22	3.819	.2618	.720	1.659	5.979	.434	1.566
23	3.858	.2592	.716	1.710	6.006	.443	1.557
24	3.895	.2567	.712	1.759	6.031	.452	1.548
25	3.931	.2544	.709	1.804	6.058	.459	1.541