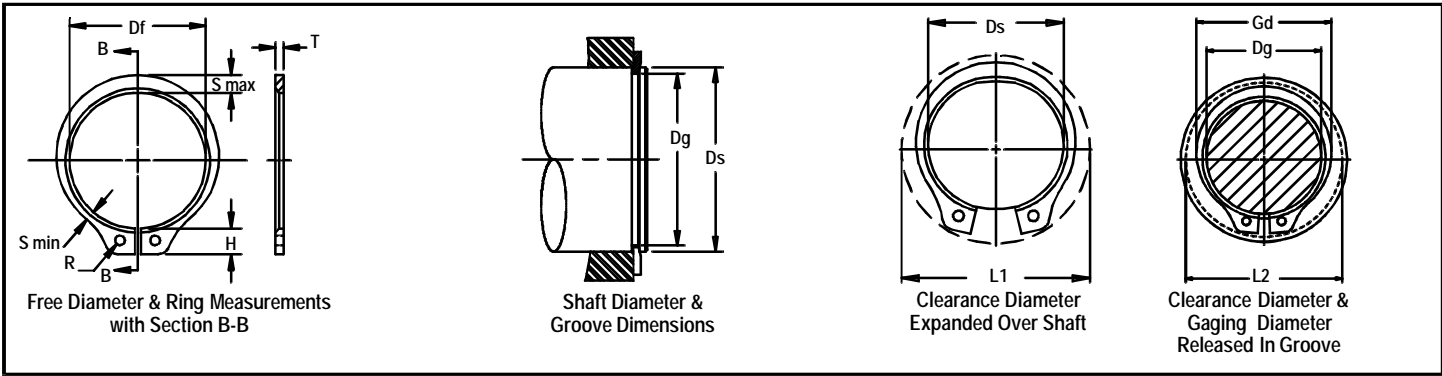




Rotor Clip VSH Retaining Rings

External Retaining Rings For End-Play Take Up

A 15° beveled edge along with a complementary groove angle combine to eliminate end play when the ring is installed.

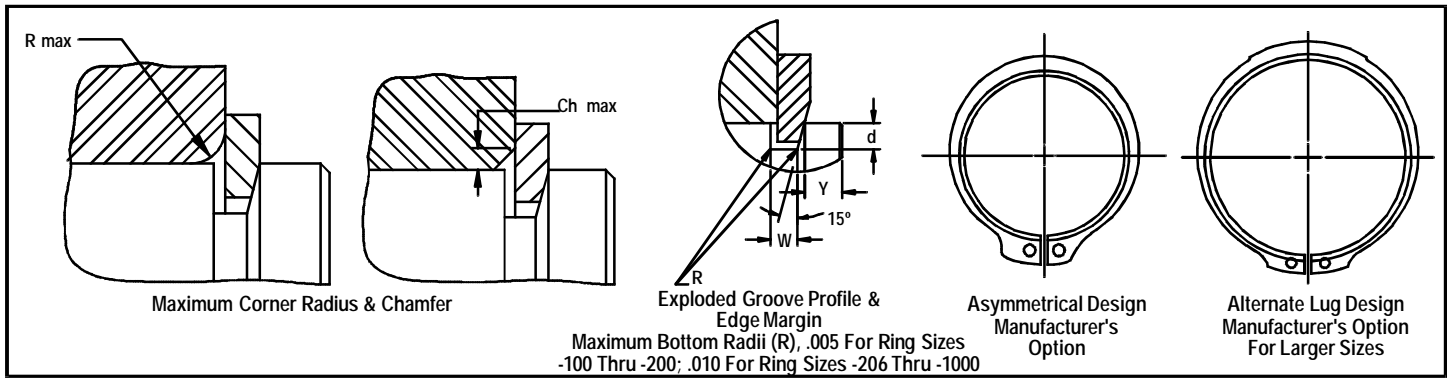


RING NO.	ALLOWABLE CORNER RADII & CHAMFERS		MAX LOAD w/ R max or Ch max (in lbs.)	EDGE MARGIN	END PLAY TAKE-UP	LUG HEIGHT		MAXIMUM SECTION		MINIMUM SECTION		HOLE DIAMETER		GAGING DIA.	THRUST LOAD (lbs.)		
	R max	Ch max				Pr	Y	In.	H	Tol.	S max	Tol.	S min		Tol.	R	Tol.
VSH-100	.057	.034	1340	.052	.005	.167	±.004	.116	±.005	.065	±.005	.078	+.015 -.002	1.144	5024	1200	
VSH-102	.058	.035	1340	.054	.005	.168		.118	.066	.078	1.170	5126		1300			
VSH-106	.060	.036	1950	.052	.005	.181		.122	.069	.078	1.217	6293		1300			
VSH-112	.063	.038	1950	.055	.005	.182		.128	.071	.078	1.286	6699		1450			
VSH-118	.064	.0385	1950	.060	.005	.182		.132	.072	.078	1.351	7105		1650			
VSH-125	.068	.041	1950	.063	.0055	.183		.140	.076	.078	1.424	7460		1850			
VSH-131	.068	.041	1950	.066	.006	.183		.146	.0765	.078	1.490	7866		2000			
VSH-137	.072	.043	1950	.069	.006	.184		.152	.082	.078	1.562	8222		2250			
VSH-143	.076	.045	1950	.070	.006	.184		.160	.086	.078	1.636	8628		2450			
VSH-150	.079	.047	1950	.076	.007	.214		.168	.091	.120	1.706	8932		2700			
VSH-156	.082	.049	3000	.076	.007	.235		.172	.093	.125	1.778	11571		2900			
VSH-162	.087	.052	3000	.081	.0075	.235		.180	.097	.125	1.849	12028		3100			
VSH-168	.090	.054	3000	.085	.0075	.235		.184	.099	.125	1.912	12535		3400			
VSH-175	.091	.054	3000	.088	.008	.237		.188	.101	.125	1.981	12992		3650			
VSH-177	.092	.055	3000	.090	.008	.237		.190	.102	.125	2.004	13144		3750			
VSH-181	.092	.055	3000	.093	.008	.238	.192	.102	.125	2.047	13449	3950					
VSH-187	.094	.056	3000	.094	.0085	.239	.196	.104	.125	2.114	13906	4200					
VSH-196	.094	.056	3000	.102	.009	.262	.200	.106	.125	2.209	14565	4700					
VSH-200	.096	.057	3000	.102	.009	.262	.204	.108	.125	2.246	14819	4800					
VSH-206	.098	.059	5000	.105	.0095	.266	.208	.111	.125	2.315	19234	5100					
VSH-212	.098	.059	5000	.109	.010	.280	.212	.113	.125	2.386	19793	5450					
VSH-215	.097	.058	5000	.111	.010	.266	.212	.113	.125	2.410	20097	5600					
VSH-225	.100	.060	5000	.115	.010	.267	.220	.116	.125	2.513	21011	6100					
VSH-231	.100	.060	5000	.118	.0105	.267	.222	.118	.125	2.577	21518	6300					
VSH-237	.100	.060	5000	.121	.011	.292	.224	.119	.125	2.640	22127	6800					
VSH-243	.102	.061	5000	.126	.011	.268	.228	.120	.125	2.706	22736	7100					
VSH-250	.104	.062	5000	.129	.0115	.268	.232	.122	.125	2.772	23345	7500					
VSH-255	.108	.065	5000	.121	.011	.268	.238	.125	.125	2.845	23853	7300					
VSH-262	.1095	.066	5000	.132	.0115	.268	.242	.127	.125	2.910	24462	8200					
VSH-268	.1115	.067	5000	.136	.012	.268	.246	.129	.125	2.975	25071	8600					
VSH-275	.112	.067	7350	.139	.012	.324	.248	.131	.125	3.041	30552	9000					
VSH-287	.115	.069	7350	.147	.013	.308	.256	.133	.125	3.172	31973	9900					
VSH-293	.116	.070	7350	.150	.0135	.308	.260	.136	.125	3.239	32683	10300					
VSH-300	.117	.070	7350	.153	.0135	.264	.264	.138	.125	3.306	33394	10700					
VSH-306	.107	.064	7350	.157	.014	.252	.252	.131	.125	3.347	34003	11200					

† BASED ON HOUSINGS/SHAFTS MADE OF COLD ROLLED STEEL. FOR AN EXPLANATION OF FORMULAS USED TO DERIVE THRUST LOAD AND OTHER PERFORMANCE DATA, CONTACT THE ROTOR CLIP ENGINEERING DEPARTMENT. FOR HARDNESS SPECIFICATIONS, SEE END OF THIS SECTION.

For a technical concern,
Please ask for our Technical Sales Department.

1-800-55-ROTOR



RING NO.	SHAFT			GROOVE SIZE				RING SIZE & WEIGHT						CLEARANCE DIA.			
	DIAMETER			DIAMETER	WIDTH	DEPTH	FREE DIAMETER	THICKNESS***	THICKNESS BEVELED END	Weight Per 1000 Pcs.	Ex-panded over shaft	Re-leased in groove					
	Ds DEC	Ds FRACT	Ds mm	Dg	Tol.	W	Tol.	d	Df	Tol.	T	Tol.	U	Tol.	lbs.	L1	L2
VSH-100	1.000	1	25.4	.930	+ .000	.037		.035	.925	+ .005	.042		.034		3.6	1.41	1.38
VSH-102	1.023	-	26.0	.951	-.003 .004*	.036		.036	.946	-.010	.042		.033		3.9	1.43	1.40
VSH-106	1.062	1-1/16	27.0	.992		.044		.035	.982		.050		.041		4.8	1.50	1.47
VSH-112	1.125	1-1/8	28.6	1.051		.044		.037	1.041		.050		.041		5.1	1.55	1.52
VSH-118	1.188	1-3/16	30.2	1.108	+ .000	.044	+ .005	.040	1.098	+ .010	.050	± .002	.041	± .001	5.6	1.61	1.57
VSH-125	1.250	1-1/4	31.7	1.166	-.004	.043	-.000	.042	1.156	-.015	.050		.040		5.9	1.69	1.65
VSH-131	1.312	1-5/16	33.3	1.224	.005*	.042		.044	1.214		.050		.039		6.8	1.75	1.71
VSH-137	1.375	1-3/8	34.9	1.282		.042		.046	1.272		.050		.039		7.2	1.80	1.76
VSH-143	1.438	1-7/16	36.5	1.343		.042		.047	1.333		.050		.039		8.1	1.87	1.83
VSH-150	1.500	1-1/2	38.1	1.397		.041		.051	1.387		.050		.038		9.0	1.99	1.95
VSH-156	1.562	1-9/16	39.7	1.459		.053		.051	1.446		.062		.049		12.4	2.10	2.05
VSH-162	1.625	1-5/8	41.3	1.516		.053		.054	1.503		.062		.049		13.2	2.17	2.13
VSH-168	1.688	1-11/16	42.9	1.573		.052		.057	1.560		.062		.048		14.8	2.24	2.20
VSH-175	1.750	1-3/4	44.4	1.631	+ .000	.052		.059	1.618	+ .013	.062	± .003	.048		15.3	2.31	2.26
VSH-177	1.772	-	45.0	1.650	-.005	.052		.061	1.637	-.020	.062		.048		15.4	2.33	2.28
VSH-181	1.812	1-13/16	46.0	1.688	.005*	.052		.062	1.675		.062		.048		16.2	2.38	2.33
VSH-187	1.875	1-7/8	47.6	1.748		.052		.063	1.735		.062		.048		17.3	2.44	2.39
VSH-196	1.969	1-31/32	50.0	1.832		.051		.068	1.819		.062		.047		18.0	2.54	2.48
VSH-200	2.000	2	50.8	1.863		.051		.068	1.850		.062		.047		19.0	2.55	2.49
VSH-206	2.062	2-1/16	52.4	1.921		.067		.070	1.906		.078		.062		25.0	2.68	2.62
VSH-212	2.125	2-1/8	54.0	1.979		.067		.073	1.964		.078		.062		26.1	2.75	2.68
VSH-215	2.156	2-5/32	54.8	2.008	+ .000	.067	+ .007	.074	1.993	+ .015	.078		.062	± .0015	26.3	2.78	2.71
VSH-225	2.250	2-1/4	57.1	2.096	-.006	.066	-.000	.077	2.081	-.025	.078		.061		27.7	2.87	2.80
VSH-231	2.312	2-5/16	58.7	2.154	.006*	.065		.079	2.139		.078		.060		28.0	2.94	2.87
VSH-237	2.375	2-3/8	60.3	2.212		.065		.081	2.197		.078		.060		29.2	3.01	2.94
VSH-243	2.438	2-7/16	61.9	2.270		.065		.084	2.255		.078		.060		29.5	3.07	3.00
VSH-250	2.500	2-1/2	63.5	2.328		.064		.086	2.313		.078		.059		29.7	3.12	3.04
VSH-255	2.559	-	65.0	2.397		.064		.081	2.377	+ .020	.078		.059		33.9	3.18	3.10
VSH-262	2.625	2-5/8	66.7	2.448		.064		.088	2.428	-.030	.078		.059		35.0	3.25	3.17
VSH-268	2.688	2-11/16	68.3	2.505		.064		.091	2.485		.078		.059		36.0	3.32	3.24
VSH-275	2.750	2-3/4	69.8	2.563		.079		.093	2.543		.093		.073		47.0	3.45	3.37
VSH-287	2.875	2-7/8	73.0	2.679		.078		.098	2.659		.093		.072		48.5	3.57	3.48
VSH-293	2.938	2-15/16	74.6	2.737		.078		.100	2.717		.093		.072	± .002	50.0	3.64	3.55
VSH-300	3.000	3	76.2	2.795		.077		.102	2.775		.093		.071		52.0	3.69	3.59
VSH-306	3.062	3-1/16	77.8	2.852		.077		.105	2.832		.093		.071		47.0	3.74	3.64

*** FOR PLATED RINGS, ADD .002" TO THE LISTED MAXIMUM THICKNESS (T) AND BEVELED END THICKNESS (U) VALUES.

* F.I.M. (FULL INDICATOR MOVEMENT)-MAXIMUM ALLOWABLE DEVIATION OF CONCENTRICITY BETWEEN GROOVE AND SHAFT.

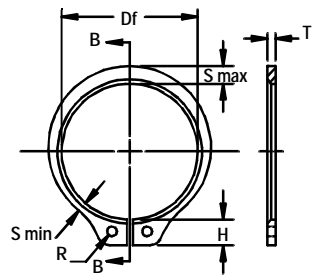
FOR HARDNESS SPECIFICATIONS, SEE END OF THIS SECTION.



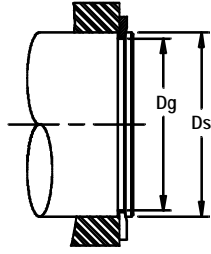
Rotor Clip VSH Retaining Rings

External Retaining Rings For End-Play Take Up

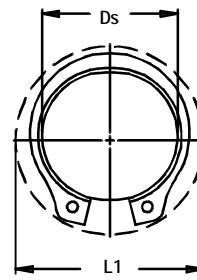
A 15° beveled edge along with a complementary groove angle combine to eliminate end play when the ring is installed.



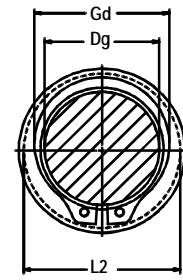
Free Diameter & Ring Measurements with Section B-B



Shaft Diameter & Groove Dimensions



Clearance Diameter Expanded Over Shaft



Clearance Diameter & Gaging Diameter Released In Groove

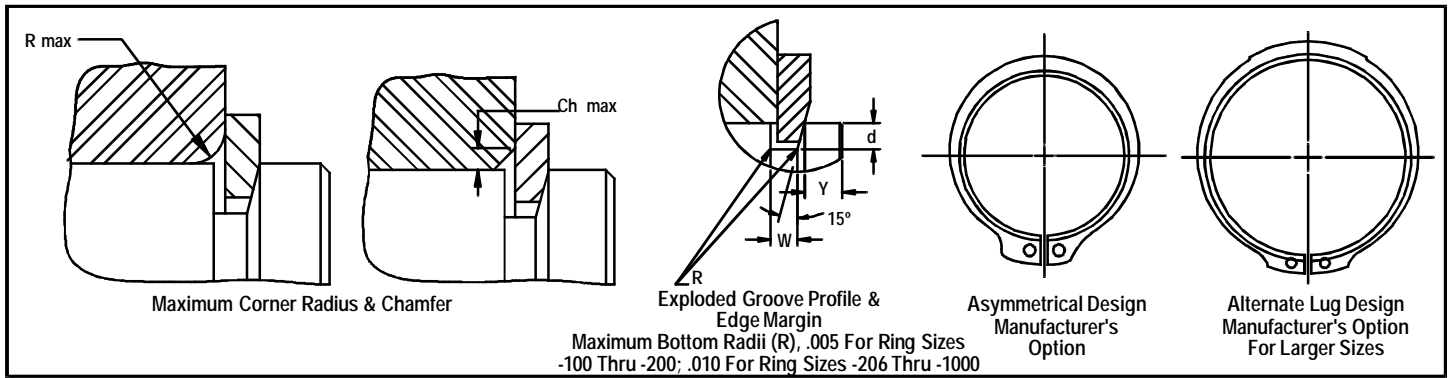
RING NO.	SHAFT			GROOVE SIZE			RING SIZE & WEIGHT						CLEARANCE DIA.		
	DIAMETER			DIAMETER	WIDTH	DEPTH	FREE DIAMETER	THICKNESS***	THICKNESS BEVELED END	Weight Per 1000 Pcs.	Expanded over shaft	Released in groove			
	Ds DEC	Ds FRACT	Ds mm	Dg Tol.	W Tol.	d	Df Tol.	T Tol.	U Tol.	lbs.	L1	L2			
VSH-312	3.125	3-1/8	79.4	2.912		.076		2.892		.093		.070	58.0	3.82	3.73
VSH-315	3.156	3-5/32	80.2	2.940	+0.000	.076	+0.007	2.920		.093		.070	59.0	3.85	3.75
VSH-325	3.250	3-1/4	82.5	3.026	-0.006	.076	-0.000	3.006		.093		.070	62.0	3.95	3.85
VSH-334	3.346	3-11/32	85.0	3.112	.006*	.075		3.092	+0.020	.093		.069	64.0	4.04	3.94
VSH-343	3.438	3-7/16	87.3	3.199		.075		3.179	-0.030	.093		.069	66.0	4.14	4.03
VSH-350	3.500	3-1/2	88.9	3.257		.091		3.237		.109		.084	72.0	4.25	4.14
VSH-354	3.543	-	90.0	3.297		.091		3.277		.109		.084	73.0	4.29	4.18
VSH-362	3.625	3-5/8	92.1	3.372		.090		3.352		.109		.083	76.0	4.37	4.25
VSH-368	3.688	3-11/16	93.7	3.430		.090		3.410		.109	±0.003	.083	80.0	4.43	4.31
VSH-375	3.750	3-3/4	95.2	3.488		.089		3.468		.109		.082	83.0	4.50	4.38
VSH-387	3.875	3-7/8	98.4	3.604		.089		3.584		.109		.082	88.0	4.60	4.47
VSH-393	3.938	3-15/16	100.0	3.662		.088	+0.008	3.642		.109		.081	95.0	4.70	4.57
VSH-400	4.000	4	101.6	3.720		.088	-0.000	3.700		.109		.081	101.0	4.78	4.65
VSH-425	4.250	4-1/4	108.0	4.009		.094		3.989		.109		.087	112.0	5.09	4.98
VSH-437	4.375	4-3/8	111.1	4.126		.094		4.106		.109		.087	115.0	5.22	5.10
VSH-450	4.500	4-1/2	114.3	4.243		.094		4.223		.109		.087	132.0	5.37	5.25
VSH-475	4.750	4-3/4	120.6	4.478		.092		4.458		.109		.085	113.0	5.67	5.54
VSH-500	5.000	5	127.0	4.712		.091		4.692		.109		.084	149.0	5.96	5.83
VSH-525	5.250	5-1/4	133.3	4.947	+0.000	.105		4.927		.125		.098	190.0	6.27	6.12
VSH-550	5.500	5-1/2	139.7	5.182	-0.007	.104		5.162	+0.020	.125	±0.004	.097	201.0	6.57	6.42
VSH-575	5.750	5-3/4	146.0	5.416	.006*	.103		5.396	-0.040	.125		.096	199.0	6.86	6.70
VSH-600	6.000	6	152.4	5.651		.102		5.631		.125		.095	210.0	7.16	6.99
VSH-625	6.250	6-1/4	158.7	5.886		.132		5.866		.156		.124	282.0	7.46	7.29
VSH-650	6.500	6-1/2	165.1	6.120		.131		6.100	+0.020	.156		.123	330.0	7.87	7.69
VSH-675	6.750	6-3/4	171.4	6.355		.130		6.335	-0.050	.156		.122	356.0	8.06	7.87
VSH-700	7.000	7	177.8	6.590		.129		6.570		.156		.121	388.0	8.36	8.16
VSH-750	7.500	7-1/2	190.5	7.059		.158		7.039		.187		.149	534.0	8.96	8.75
VSH-800	8.000	8	203.2	7.528	+0.000	.157		7.508		.187	±0.005	.148	628.0	9.56	9.33
VSH-850	8.500	8-1/2	215.9	7.997	-0.008	.154		7.977	+0.020	.187		.145	700.0	10.16	9.91
VSH-900	9.000	9	228.6	8.465	.006*	.153		8.445	-0.060	.187		.144	757.0	10.75	10.49
VSH-950	9.500	9-1/2	241.3	8.935		.150		8.915		.187		.141	820.0	11.34	11.06
VSH-1000	10.000	10	254.0	9.405		.148		9.385		.187		.139	964.0	11.94	11.65

* F.I.M. (FULL INDICATOR MOVEMENT)-MAXIMUM ALLOWABLE DEVIATION OF CONCENTRICITY BETWEEN GROOVE AND SHAFT.

***FOR PLATED RINGS ADD .002" TO THE LISTED MAXIMUM THICKNESS. MAXIMUM RING THICKNESS WILL BE A MINIMUM OF .0002" LESS THAN THE LISTED GROOVE WIDTH (W) MINIMUM.

For a technical concern,
Please ask for our Technical Sales Department.

1-800-55-ROTOR



RING NO.	ALLOWABLE CORNER RADII & CHAMFERS		MAX. LOAD w/ R max or Ch max (in lbs.) Pr	EDGE MARGIN Y	END-PLAY TAKE-UP In.	LUG HEIGHT		MAXIMUM SECTION		MINIMUM SECTION		HOLE DIAMETER		GAGING DIA. Gd max	THRUST LD. (lbs.) Sqr. corner abutment		
	R max	Ch max				H	Tol.	S max	Tol.	S min	Tol.	R	Tol.		Pr	Pg	
VSH-312	.120	.072	7350	.159	.014	.308		.272		.141		.125		3.439	34815	11700	
VSH-315	.1205	.072	7350	.162	.0145	.324		.274		.143		.125		3.469	35119	11900	
VSH-325	.123	.074	7350	.168	.015	.308		.280		.145		.125		3.571	36134	12700	
VSH-334	.126	.076	7350	.175	.0155	.300		.300		.147		.125		3.669	37251	13600	
VSH-343	.129	.077	7350	.178	.016	.308	±.005	.292	±.008	.148	±.008	.125	+.015	3.767	38266	14300	
VSH-350	.122	.073	10500	.181	.016	.285		.285		.148		.125	-.002	3.821	45574	14800	
VSH-354	.123	.074	10500	.184	.0165	.328		.288		.149		.125		3.866	46183	15200	
VSH-362	.127	.076	10500	.189	.017	.328		.296		.153		.125		3.956	47299	16300	
VSH-368	.1295	.078	10500	.193	.017	.330		.302		.156		.125		4.026	48010	16500	
VSH-375	.133	.080	10500	.196	.0175	.332		.310		.160		.125		4.098	48822	17200	
VSH-387	.137	.082	10500	.202	.018	.330		.318		.163		.125		4.229	50446	18300	
VSH-393	.137	.082	10500	.207	.0185	.342		.318		.163		.125		4.290	51359	19000	
VSH-400	.135	.081	10500	.210	.019	.352		.318		.163		.125		4.350	52171	19600	
VSH-425	.146	.088	10500	.180	.016	.395		.318		.176		.125		4.620	55419	18000	
VSH-437	.146	.088	10500	.186	.017	.395		.318		.181		.125		4.740	57043	19000	
VSH-450	.102	.061	10500	.192	.017	.405		.405		.185		.125		4.920	58667	20200	
VSH-475	.115	.069	10500	.204	.018	.429		.303		.136		.125		5.060	61915	22700	
VSH-500	.165	.099	10500	.216	.019	.450	±.008	.360	±.010	.194	±.010	.156		5.410	65163	25400	
VSH-525	.169	.101	13500	.226	.020	.472		.372		.211		.156		5.670	78460	28000	
VSH-550	.175	.105	13500	.238	.021	.497		.390		.209		.156		5.940	82215	30800	
VSH-575	.184	.110	13500	.250	.022	.518		.408		.220		.156		6.210	85971	33800	
VSH-600	.143	.086	13500	.261	.023	.540		.381		.171		.156		6.380	89625	37000	
VSH-625	.148	.089	21000	.273	.024	.561		.396		.176		.156	+.020	6.650	116522	40000	
VSH-650	.191	.114	21000	.285	.025	.586		.438		.236		.156	-.005	6.980	121191	43500	
VSH-675	.200	.120	21000	.295	.026	.608		.456		.246		.187		7.260	125860	47000	
VSH-700	.208	.125	21000	.307	.027	.530		.474		.256		.187		7.520	130529	50500	
VSH-750	.220	.132	30000	.330	.029	.676	±.012	.507	±.015	.277	±.015	.187		8.060	167678	58000	
VSH-800	.235	.141	30000	.354	.032	.735		.540		.294		.187		8.590	178843	66500	
VSH-850	.250	.150	30000	.376	.034	.735		.573		.314		.187		9.130	190008	75000	
VSH-900	.267	.160	30000	.400	.036	.735		.609		.333		.187		9.670	201173	86000	
VSH-950	.281	.168	30000	.423	.038	.735		.642		.350		.187		10.200	212338	94500	
VSH-1000	.294	.176	30000	.445	.040	.735		.675		.367		.187		10.730	223503	105000	

† BASED ON HOUSINGS/SHAFTS MADE OF COLD ROLLED STEEL. FOR AN EXPLANATION OF FORMULAS USED TO DERIVE THRUST LOAD AND OTHER PERFORMANCE DATA, CONTACT THE ROTOR CLIP ENGINEERING DEPARTMENT.

TABLE 1: HARDNESS RANGES-ROTOR CLIP
STAINLESS STEEL RINGS (PH 15-7 MO)

RING	SIZE RANGE	SCALE	ROCKWELL HARDNESS
VSH	all	c	44-51

TABLE 2: HARDNESS RANGES-ROTOR CLIP
BERYLLIUM COPPER RINGS

RING	SIZE RANGE	SCALE	ROCKWELL HARDNESS
VSH	100-102	30N	56.5-62
	106&over	C	37-43

CARBON STEEL RINGS (SAE 1060-1090)

RING	SIZE RANGE	SCALE	ROCKWELL HARDNESS
VSH	100-102	C	47-53
	106-343	C	47-52
	350-700	C	44-51
	725-1000	C	40-47