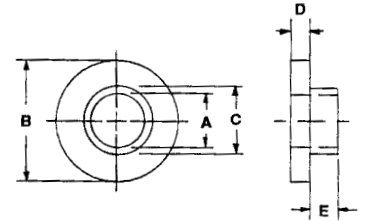


# HIGH PERFORMANCE PLASTIC SHOULDER WASHERS

\*Available in the following materials:

Material Code No.	Material Name	Material Code No.	Material Name
-11	Polypropylene	-38	G-10 Fiber Glass
-27	PVC	-40	PFA, (Teflon®)
-28	CPVC	-46	Polycarbonate
-18	Nylon 6/6, (natural)	-60	Nylon 6/6, 30% Short Glass-filled
-29	Teflon®	-62	Acetal
-37	PVDF		

\*Available in other materials.  
See materials list in index.  
Other sizes available on request.



Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-1	.046	.187	.140	.015	.015	-46	.093	.250	.152	.031	.025
-2	.055	.250	.125	.028	.028	-47	.093	.250	.152	.062	.025
-3	.055	.344	.125	.016	.060	-48	.093	.250	.157	.046	.046
-4	.061	.105	.084	.047	.047	-49	.093	.250	.185	.031	.025
-5	.063	.156	.090	.031	.025	-50	.093	.250	.185	.062	.025
-6	.063	.156	.092	.013	.017	-51	.093	.265	.157	.026	.015
-7	.063	.156	.122	.031	.025	-52	.093	.281	.158	.094	.125
-8	.063	.187	.090	.031	.025	-53	.093	.289	.215	.062	.062
-9	.063	.187	.119	.031	.078	-54	.093	.312	.122	.031	.025
-10	.063	.187	.119	.031	.187	-55	.093	.312	.122	.062	.025
-11	.063	.187	.122	.031	.025	-56	.093	.312	.152	.031	.025
-12	.063	.187	.125	.025	.030	-57	.093	.312	.152	.062	.025
-13	.063	.187	.125	.040	.020	-58	.093	.312	.185	.031	.025
-14	.063	.250	.090	.031	.025	-59	.093	.312	.185	.062	.025
-15	.063	.250	.122	.031	.025	-60	.093	.317	.183	.060	.030
-16	.063	.250	.156	.032	.075	-61	.093	.375	.122	.031	.025
-17	.075	.197	.118	.031	.281	-62	.093	.375	.122	.062	.025
-18	.076	.297	.124	.230	.125	-63	.093	.375	.152	.031	.025
-19	.076	.230	.140	.230	.020	-64	.093	.375	.152	.062	.025
-20	.078	.215	.150	.031	.050	-65	.093	.375	.185	.031	.025
-21	.080	.500	.305	.031	.047	-66	.093	.375	.185	.062	.025
-22	.083	.240	.123	.018	.022	-67	.093	.437	.185	.031	.025
-23	.083	.240	.135	.018	.022	-68	.093	.437	.185	.062	.025
-24	.085	.182	.131	.062	.031	-69	.095	.189	.119	.062	.031
-25	.085	.182	.131	.078	.031	-70	.095	.250	.187	.047	.672
-26	.089	.187	.119	.031	.016	-71	.095	.260	.154	.016	.016
-27	.093	.140	.115	.015	.004	-72	.097	.312	.160	.047	.016
-28	.093	.187	.122	.025	.031	-73	.098	.218	.170	.062	.031
-29	.093	.187	.122	.062	.025	-74	.098	.240	.150	.031	.031
-30	.093	.195	.120	.031	.062	-75	.098	.312	.138	.031	.020
-31	.093	.200	.120	.031	.062	-76	.099	.312	.128	.031	.031
-32	.093	.205	.125	.031	.078	-77	.100	.228	.138	.047	.031
-33	.093	.205	.125	.031	.109	-78	.100	.250	.114	.047	.031
-34	.093	.205	.125	.031	.187	-79	.100	.250	.114	.047	.094
-35	.093	.218	.122	.031	.025	-80	.101	.218	.152	.031	.025
-36	.093	.218	.122	.062	.025	-81	.101	.218	.152	.062	.025
-37	.093	.218	.152	.031	.025	-82	.101	.224	.152	.038	.062
-38	.093	.218	.152	.062	.025	-83	.101	.234	.123	.062	.031
-39	.093	.219	.154	.033	.008	-84	.101	.250	.152	.031	.025
-40	.093	.228	.122	.031	.031	-85	.101	.250	.152	.062	.025
-41	.093	.234	.124	.020	.007	-86	.101	.250	.160	.034	.078
-42	.093	.250	.122	.062	.025	-87	.101	.250	.171	.031	.015
-43	.093	.250	.122	.031	.025	-88	.101	.250	.185	.031	.025
-44	.093	.250	.124	.031	.025						
-45	.093	.250	.140	.031	.020						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.046 I.D. to .101 I.D.**

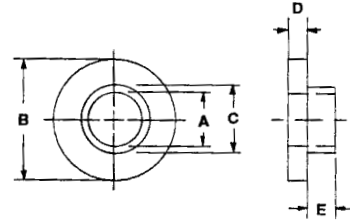
Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

\*Available in the following materials:

Material Code No.	Material Name	Material Code No.	Material Name
-11	Polypropylene	-38	G-10 Fiber Glass
-27	PVC	-40	PFA, (Teflon®)
-28	CPVC	-46	Polycarbonate
-18	Nylon 6/6, (natural)	-60	Nylon 6/6, 30% Short Glass-filled
-29	Teflon®	-62	Acetal
-37	PVDF		

\*Available in other materials.  
See materials list in index.  
Other sizes available on request.



Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-89	.101	.250	.185	.031	.050	-134	.112	.325	.140	.145	.185
-90	.101	.250	.185	.062	.025	-135	.112	.350	.300	.016	.171
-91	.101	.250	.185	.062	.050	-136	.113	.215	.139	.065	.035
-92	.101	.296	.203	.055	.055	-137	.113	.250	.140	.046	.046
-93	.101	.312	.152	.031	.025	-138	.113	.245	.150	.062	.018
-94	.101	.312	.152	.062	.025	-139	.113	.250	.143	.047	.047
-95	.101	.312	.165	.062	.063	-140	.113	.250	.187	.032	.032
-96	.101	.312	.185	.031	.025	-141	.113	.312	.203	.031	.062
-97	.101	.312	.185	.031	.050	-142	.113	.375	.244	.062	.020
-98	.101	.312	.185	.062	.025	-143	.114	.240	.135	.062	.047
-99	.101	.312	.185	.062	.050	-144	.114	.240	.138	.062	.047
-100	.101	.312	.216	.031	.025	-145	.115	.235	.132	.125	.047
-101	.101	.312	.216	.031	.050	-146	.115	.200	.136	.020	.030
-102	.101	.312	.216	.062	.025	-147	.115	.210	.137	.039	.032
-103	.101	.312	.216	.062	.050	-148	.115	.200	.140	.031	.031
-104	.101	.375	.152	.031	.025	-149	.115	.203	.140	.047	.031
-105	.101	.375	.152	.062	.025	-150	.115	.216	.135	.047	.031
-106	.101	.375	.185	.031	.025	-151	.115	.218	.135	.047	.031
-107	.101	.375	.185	.031	.050	-152	.115	.234	.147	.047	.047
-108	.101	.375	.185	.062	.025	-153	.115	.235	.137	.047	.031
-109	.101	.375	.185	.062	.050	-154	.115	.235	.140	.047	.094
-110	.101	.375	.187	.070	.062	-155	.115	.235	.145	.047	.094
-111	.101	.375	.203	.020	.020	-156	.115	.235	.145	.047	.125
-112	.101	.375	.216	.031	.025	-157	.115	.235	.145	.047	.250
-113	.101	.375	.216	.031	.050	-158	.115	.240	.139	.047	.031
-114	.101	.375	.216	.062	.025	-159	.115	.242	.140	.047	.109
-115	.101	.375	.216	.062	.050	-160	.115	.242	.140	.047	.125
-116	.101	.437	.185	.031	.025	-161	.115	.250	.143	.031	.062
-117	.101	.437	.185	.031	.050	-162	.115	.250	.145	.047	.109
-118	.101	.437	.185	.062	.025	-163	.115	.250	.145	.047	.140
-119	.101	.437	.185	.062	.050	-164	.115	.250	.145	.047	.171
-120	.101	.437	.216	.031	.025	-165	.115	.250	.150	.171	.218
-121	.101	.437	.216	.031	.050	-166	.115	.250	.156	.047	.047
-122	.101	.437	.216	.062	.025	-167	.115	.281	.175	.031	.062
-123	.101	.437	.216	.062	.050	-168	.115	.312	.149	.062	.062
-124	.101	.500	.216	.031	.025	-169	.115	.312	.187	.062	.016
-125	.101	.500	.216	.031	.050	-170	.115	.315	.150	.062	.031
-126	.101	.500	.216	.062	.025	-171	.115	.343	.185	.062	.025
-127	.101	.500	.216	.062	.050	-172	.115	.368	.146	.078	.203
-128	.102	.250	.169	.031	.062	-173	.115	.370	.145	.078	.203
-129	.109	.200	.138	.031	.047	-174	.116	.250	.185	.050	.062
-130	.110	.235	.135	.047	.156	-175	.116	.250	.185	.112	.062
-131	.111	.250	.124	.047	.016	-176	.116	.250	.187	.031	.062
-132	.112	.200	.134	.030	.031						
-133	.112	.200	.137	.030	.080						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.101 I.D. to .116 I.D.**

Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-177	.116	.200	.135	.078	.031	-234	.116	.437	.279	.062	.050
-178	.116	.250	.150	.031	.016	-235	.116	.437	.310	.031	.027
-179	.116	.250	.185	.031	.027	-236	.116	.437	.310	.031	.050
-180	.116	.250	.185	.031	.047	-237	.116	.437	.310	.062	.027
-181	.116	.250	.185	.031	.050	-238	.116	.437	.310	.062	.050
-182	.116	.250	.185	.062	.027	-239	.116	.468	.216	.031	.027
-183	.116	.250	.185	.062	.047	-240	.116	.468	.216	.031	.050
-184	.116	.250	.185	.062	.050	-241	.116	.468	.216	.062	.027
-185	.116	.279	.187	.062	.063	-242	.116	.468	.216	.062	.050
-186	.116	.312	.185	.031	.027	-243	.116	.468	.248	.031	.027
-187	.116	.312	.185	.031	.047	-244	.116	.468	.248	.031	.050
-188	.116	.312	.185	.031	.050	-245	.116	.468	.248	.062	.027
-189	.116	.312	.185	.062	.027	-246	.116	.468	.248	.062	.050
-190	.116	.312	.185	.062	.050	-247	.116	.468	.279	.031	.027
-191	.116	.312	.216	.031	.027	-248	.116	.468	.279	.031	.050
-192	.116	.312	.216	.031	.050	-249	.116	.468	.279	.062	.027
-193	.116	.312	.216	.062	.027	-250	.116	.468	.279	.062	.050
-194	.116	.312	.216	.062	.050	-251	.116	.468	.310	.031	.027
-195	.116	.316	.158	.047	.094	-252	.116	.468	.310	.031	.050
-196	.116	.343	.248	.031	.027	-253	.116	.468	.310	.062	.027
-197	.116	.343	.248	.031	.050	-254	.116	.468	.310	.062	.050
-198	.116	.343	.248	.062	.027	-255	.116	.500	.248	.031	.027
-199	.116	.343	.248	.062	.050	-256	.116	.500	.248	.031	.050
-200	.116	.375	.185	.031	.027	-257	.116	.500	.248	.062	.027
-201	.116	.375	.185	.031	.050	-258	.116	.500	.248	.062	.050
-202	.116	.375	.185	.062	.027	-259	.116	.500	.279	.031	.027
-203	.116	.375	.185	.062	.050	-260	.116	.500	.279	.031	.050
-204	.116	.375	.193	.078	.156	-261	.116	.500	.279	.062	.027
-205	.116	.375	.216	.031	.027	-262	.116	.500	.279	.062	.050
-206	.116	.375	.216	.031	.050	-263	.116	.500	.310	.031	.027
-207	.116	.375	.216	.062	.027	-264	.116	.500	.310	.031	.050
-208	.116	.375	.216	.062	.050	-265	.116	.500	.310	.062	.027
-209	.116	.375	.248	.031	.027	-266	.116	.500	.310	.062	.050
-210	.116	.375	.248	.031	.050	-267	.116	.562	.248	.031	.027
-211	.116	.375	.248	.062	.027	-268	.116	.562	.248	.031	.050
-212	.116	.375	.248	.062	.050	-269	.116	.562	.248	.062	.027
-213	.116	.375	.279	.031	.027	-270	.116	.562	.248	.062	.050
-214	.116	.375	.279	.031	.050	-271	.116	.562	.279	.031	.027
-215	.116	.375	.279	.062	.027	-272	.116	.562	.279	.031	.050
-216	.116	.375	.279	.062	.050	-273	.116	.562	.279	.062	.027
-217	.116	.378	.194	.078	.156	-274	.116	.562	.279	.062	.050
-218	.116	.378	.255	.031	.125	-275	.116	.562	.310	.031	.027
-219	.116	.437	.185	.031	.027	-276	.116	.562	.310	.031	.050
-220	.116	.437	.185	.031	.050	-277	.116	.562	.310	.062	.027
-221	.116	.437	.185	.062	.027	-278	.116	.562	.310	.062	.050
-222	.116	.437	.185	.062	.050	-279	.116	.625	.248	.031	.027
-223	.116	.437	.216	.031	.027	-280	.116	.625	.248	.031	.050
-224	.116	.437	.216	.031	.050	-281	.116	.625	.248	.062	.027
-225	.116	.437	.216	.062	.027	-282	.116	.625	.248	.062	.050
-226	.116	.437	.216	.062	.050	-283	.116	.625	.279	.031	.027
-227	.116	.437	.248	.031	.027	-284	.116	.625	.279	.031	.050
-228	.116	.437	.248	.031	.050	-285	.116	.625	.279	.062	.027
-229	.116	.437	.248	.062	.027	-286	.116	.625	.279	.062	.050
-230	.116	.437	.248	.062	.050	-287	.116	.625	.310	.031	.027
-231	.116	.437	.279	.031	.027	-288	.116	.625	.310	.031	.050
-232	.116	.437	.279	.031	.050						
-233	.116	.437	.279	.062	.027						

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Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.116 I.D. to .116 I.D.**

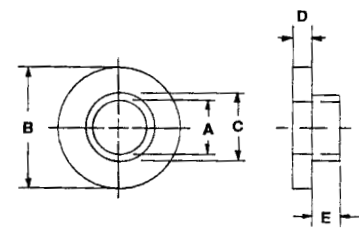
Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

\*Available in the following materials:

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-11	Polypropylene	-38	G-10 Fiber Glass
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-28	CPVC	-46	Polycarbonate
-18	Nylon 6/6, (natural)	-60	Nylon 6/6, 30% Short Glass-filled
-29	Teflon®	-62	Acetal
-37	PVDF		

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See materials list in index.  
Other sizes available on request.



Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-289	.116	.625	.310	.062	.027	-334	.126	.312	.185	.031	.047
-290	.116	.625	.310	.062	.050	-335	.126	.312	.185	.031	.050
-291	.117	.220	.135	.032	.040	-336	.126	.312	.185	.047	.047
-292	.118	.250	.137	.070	.036	-337	.126	.312	.185	.062	.027
-293	.118	.250	.139	.047	.125	-338	.126	.312	.185	.062	.050
-294	.118	.250	.143	.031	.062	-339	.126	.312	.188	.094	.020
-295	.118	.281	.177	.031	.015	-340	.126	.312	.190	.045	.040
-296	.120	.234	.136	.020	.044	-341	.126	.312	.216	.031	.027
-297	.120	.202	.145	.016	.047	-342	.126	.312	.216	.031	.050
-298	.120	.210	.145	.016	.047	-343	.126	.312	.216	.062	.027
-299	.120	.375	.220	.031	.031	-344	.126	.312	.216	.062	.050
-300	.120	.224	.154	.031	.062	-345	.126	.312	.225	.062	.042
-301	.120	.224	.154	.031	.437	-346	.126	.313	.188	.063	.031
-302	.120	.250	.138	.047	.062	-347	.126	.343	.218	.050	.012
-303	.120	.250	.191	.032	.027	-348	.126	.343	.248	.031	.027
-304	.120	.253	.136	.047	.078	-349	.126	.343	.248	.031	.050
-305	.120	.291	.154	.062	.234	-350	.126	.343	.248	.062	.027
-306	.120	.312	.170	.062	.062	-351	.126	.343	.248	.062	.050
-307	.120	.312	.180	.062	.031	-352	.126	.370	.255	.085	.040
-308	.120	.312	.190	.045	.045	-353	.126	.375	.185	.031	.027
-309	.120	.312	.203	.047	.031	-354	.126	.375	.185	.031	.050
-310	.120	.312	.214	.031	.031	-355	.126	.375	.185	.062	.027
-311	.120	.375	.190	.040	.022	-356	.126	.375	.185	.062	.050
-312	.121	.375	.245	.031	.063	-357	.126	.375	.187	.047	.031
-313	.121	.375	.265	.031	.094	-358	.126	.375	.190	.040	.040
-314	.122	.230	.142	.023	.041	-359	.126	.375	.216	.031	.027
-315	.122	.250	.144	.200	.062	-360	.126	.375	.216	.031	.050
-316	.122	.230	.142	.016	.047	-361	.126	.375	.216	.062	.027
-317	.124	.375	.124	.031	.062	-362	.126	.375	.216	.062	.050
-318	.124	.313	.219	.031	.031	-363	.126	.375	.248	.031	.027
-319	.125	.240	.185	.031	.094	-364	.126	.375	.248	.031	.050
-320	.125	.625	.500	.100	.125	-365	.126	.375	.248	.062	.027
-321	.126	.265	.157	.031	.031	-366	.126	.375	.248	.062	.050
-322	.126	.312	.185	.047	.047	-367	.126	.375	.250	.095	.030
-323	.126	.245	.199	.063	.093	-368	.126	.375	.250	.127	.035
-324	.126	.250	.170	.020	.020	-369	.126	.375	.279	.031	.027
-325	.126	.250	.185	.031	.027	-370	.126	.375	.279	.031	.050
-326	.126	.250	.185	.031	.050	-371	.126	.375	.279	.062	.027
-327	.126	.250	.185	.062	.027	-372	.126	.375	.279	.062	.050
-328	.126	.250	.185	.062	.050	-373	.126	.375	.312	.050	.050
-329	.126	.250	.186	.047	.171	-374	.126	.437	.171	.062	.031
-330	.126	.265	.157	.031	.031	-375	.126	.437	.185	.031	.027
-331	.126	.265	.157	.035	.028	-376	.126	.437	.185	.031	.050
-332	.126	.312	.175	.062	.025						
-333	.126	.312	.185	.031	.027						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.116 I.D. to .126 I.D.**

Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-377	.126	.437	.185	.062	.027	-434	.126	.562	.310	.031	.050
-378	.126	.437	.185	.062	.050	-435	.126	.562	.310	.062	.027
-379	.126	.437	.216	.031	.027	-436	.126	.562	.310	.062	.050
-380	.126	.437	.216	.031	.050	-437	.126	.625	.248	.031	.027
-381	.126	.437	.216	.062	.027	-438	.126	.625	.248	.031	.050
-382	.126	.437	.216	.062	.050	-439	.126	.625	.248	.062	.027
-383	.126	.437	.248	.031	.027	-440	.126	.625	.248	.062	.050
-384	.126	.437	.248	.031	.050	-441	.126	.625	.279	.031	.027
-385	.126	.437	.248	.062	.027	-442	.126	.625	.279	.031	.050
-386	.126	.437	.248	.062	.050	-443	.126	.625	.279	.062	.027
-387	.126	.437	.279	.031	.027	-444	.126	.625	.279	.062	.050
-388	.126	.437	.279	.031	.050	-445	.126	.625	.310	.031	.027
-389	.126	.437	.279	.062	.027	-446	.126	.625	.310	.031	.050
-390	.126	.437	.279	.062	.050	-447	.126	.625	.310	.062	.027
-391	.126	.437	.310	.031	.027	-448	.126	.625	.310	.062	.050
-392	.126	.437	.310	.031	.050	-449	.127	.312	.170	.062	.047
-393	.126	.437	.310	.062	.027	-450	.128	.312	.185	.078	.031
-394	.126	.437	.310	.062	.050	-451	.128	.234	.150	.046	.046
-395	.126	.438	.219	.047	.047	-452	.128	.281	.193	.062	.055
-396	.126	.468	.216	.031	.027	-453	.128	.312	.185	.031	.062
-397	.126	.468	.216	.031	.050	-454	.128	.312	.185	.031	.078
-398	.126	.468	.216	.062	.027	-455	.128	.312	.185	.050	.024
-399	.126	.468	.216	.062	.050	-456	.128	.312	.187	.047	.094
-400	.126	.468	.248	.031	.027	-457	.128	.312	.187	.047	.100
-401	.126	.468	.248	.031	.050	-458	.128	.312	.218	.031	.062
-402	.126	.468	.248	.062	.027	-459	.128	.320	.265	.040	.085
-403	.126	.468	.248	.062	.050	-460	.128	.345	.185	.062	.028
-404	.126	.468	.279	.031	.027	-461	.128	.375	.185	.031	.020
-405	.126	.468	.279	.031	.050	-462	.128	.378	.185	.050	.024
-406	.126	.468	.279	.062	.027	-463	.128	.437	.215	.053	.020
-407	.126	.468	.279	.062	.050	-464	.130	.312	.180	.085	.032
-408	.126	.468	.310	.031	.027	-465	.130	.228	.175	.078	.053
-409	.126	.468	.310	.031	.050	-466	.130	.250	.195	.031	.125
-410	.126	.468	.310	.062	.027	-467	.130	.308	.223	.038	.022
-411	.126	.468	.310	.062	.050	-468	.130	.312	.154	.031	.312
-412	.126	.469	.279	.062	.050	-469	.130	.335	.187	.040	.085
-413	.126	.500	.248	.031	.027	-470	.130	.343	.190	.031	.031
-414	.126	.500	.248	.031	.050	-471	.130	.375	.250	.062	.045
-415	.126	.500	.248	.062	.027	-472	.130	.437	.192	.031	.044
-416	.126	.500	.248	.062	.050	-473	.132	.343	.206	.024	.020
-417	.126	.500	.279	.031	.027	-474	.132	.355	.242	.060	.080
-418	.126	.500	.279	.031	.050	-475	.133	.343	.219	.062	.118
-419	.126	.500	.279	.062	.027	-476	.135	.325	.183	.085	.062
-420	.126	.500	.279	.062	.050	-477	.135	.296	.235	.031	.218
-421	.126	.500	.310	.031	.027	-478	.135	.312	.187	.031	.015
-422	.126	.500	.310	.031	.050	-479	.135	.328	.187	.062	.035
-423	.126	.500	.310	.062	.027	-480	.135	.328	.187	.063	.010
-424	.126	.500	.310	.062	.050	-481	.135	.343	.226	.062	.040
-425	.126	.562	.248	.031	.027	-482	.135	.437	.187	.062	.015
-426	.126	.562	.248	.031	.050	-483	.135	.438	.250	.031	.140
-427	.126	.562	.248	.062	.027	-484	.136	.250	.187	.032	.032
-428	.126	.562	.248	.062	.050	-485	.136	.250	.187	.063	.032
-429	.126	.562	.279	.031	.027	-486	.136	.312	.185	.050	.024
-430	.126	.562	.279	.031	.050	-487	.136	.312	.187	.062	.032
-431	.126	.562	.279	.062	.027	-488	.136	.312	.198	.062	.046
-432	.126	.562	.279	.062	.050						
-433	.126	.562	.310	.031	.027						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.126 I. D. to .136 I. D.**

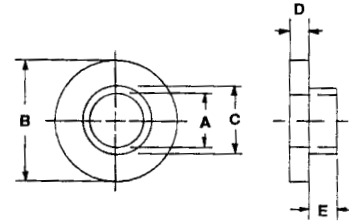
Shank O.D. - .005/+0.00  
Shank Thickness +/- .005  
Shank I.D. + .005/-0.00

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

\*Available in the following materials:

Material Code No.	Material Name	Material Code No.	Material Name
-11	Polypropylene	-38	G-10 Fiber Glass
-27	PVC	-40	PFA, (Teflon®)
-28	CPVC	-46	Polycarbonate
-18	Nylon 6/6, (natural)	-60	Nylon 6/6, 30% Short Glass-filled
-29	Teflon®	-62	Acetal
-37	PVDF		

\*Available in other materials.  
See materials list in index.  
Other sizes available on request.



Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-489	.136	.313	.219	.031	.031	-534	.140	.500	.312	.090	.062
-490	.136	.375	.195	.047	.109	-535	.140	.313	.187	.023	.039
-491	.136	.375	.245	.062	.078	-536	.140	.313	.187	.031	.016
-492	.136	.375	.248	.062	.094	-537	.140	.324	.204	.062	.031
-493	.136	.562	.437	.031	.031	-538	.140	.328	.187	.064	.086
-494	.138	.293	.218	.047	.187	-539	.140	.340	.250	.078	.047
-495	.138	.375	.240	.062	.109	-540	.140	.343	.185	.031	.027
-496	.138	.375	.250	.094	.062	-541	.140	.343	.185	.031	.050
-497	.139	.250	.186	.031	.031	-542	.140	.343	.185	.062	.027
-498	.139	.310	.183	.062	.016	-543	.140	.343	.185	.062	.050
-499	.140	.312	.178	.050	.048	-544	.140	.343	.216	.031	.027
-500	.140	.312	.185	.027	.062	-545	.140	.343	.216	.031	.050
-501	.140	.312	.185	.050	.062	-546	.140	.343	.216	.062	.027
-502	.140	.312	.185	.062	.050	-547	.140	.343	.216	.062	.050
-503	.140	.281	.200	.062	.031	-548	.140	.343	.221	.062	.016
-504	.140	.375	.235	.030	.060	-549	.140	.343	.248	.031	.027
-505	.140	.375	.237	.180	.060	-550	.140	.343	.248	.031	.050
-506	.140	.343	.248	.050	.062	-551	.140	.343	.248	.062	.027
-507	.140	.250	.185	.031	.027	-552	.140	.343	.248	.062	.050
-508	.140	.250	.185	.031	.050	-553	.140	.349	.248	.047	.062
-509	.140	.250	.185	.062	.027	-554	.140	.375	.185	.016	.094
-510	.140	.250	.185	.062	.050	-555	.140	.375	.185	.031	.027
-511	.140	.250	.187	.032	.032	-556	.140	.375	.185	.031	.050
-512	.140	.250	.187	.063	.032	-557	.140	.375	.185	.031	.062
-513	.140	.250	.190	.062	.047	-558	.140	.375	.185	.031	.094
-514	.140	.252	.186	.031	.031	-559	.140	.375	.185	.045	.035
-515	.140	.260	.190	.062	.047	-560	.140	.375	.185	.062	.031
-516	.140	.290	.170	.047	.031	-561	.140	.375	.185	.062	.050
-517	.140	.290	.170	.047	.047	-562	.140	.375	.199	.218	.078
-518	.140	.290	.170	.047	.250	-563	.140	.375	.216	.031	.027
-519	.140	.295	.234	.031	.218	-564	.140	.375	.216	.031	.050
-520	.140	.312	.170	.047	.062	-565	.140	.375	.216	.062	.027
-521	.140	.312	.180	.031	.031	-566	.140	.375	.216	.062	.050
-522	.140	.312	.185	.031	.027	-567	.140	.375	.218	.062	.047
-523	.140	.312	.185	.031	.031	-568	.140	.375	.248	.031	.027
-524	.140	.312	.185	.060	.040	-569	.140	.375	.248	.031	.050
-525	.140	.312	.185	.062	.027	-570	.140	.375	.248	.062	.027
-526	.140	.312	.185	.062	.032	-571	.140	.375	.248	.062	.050
-527	.140	.312	.185	.062	.050	-572	.140	.375	.250	.094	.062
-528	.140	.312	.198	.031	.031	-573	.140	.375	.279	.031	.027
-529	.140	.312	.210	.055	.035	-574	.140	.375	.279	.031	.050
-530	.140	.312	.216	.031	.027	-575	.140	.375	.279	.062	.027
-531	.140	.312	.216	.031	.050	-576	.140	.375	.279	.062	.050
-532	.140	.312	.216	.062	.027						
-533	.140	.312	.216	.062	.050						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.136 I.D. to .140 I.D.**

Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-577	.140	.381	.185	.062	.047	-634	.140	.500	.279	.031	.050
-578	.140	.400	.275	.125	.125	-635	.140	.500	.279	.062	.027
-579	.140	.437	.185	.031	.027	-636	.140	.500	.279	.062	.050
-580	.140	.437	.185	.031	.050	-637	.140	.500	.310	.031	.027
-581	.140	.437	.185	.062	.027	-638	.140	.500	.310	.031	.050
-582	.140	.437	.185	.062	.050	-639	.140	.500	.310	.062	.027
-583	.140	.437	.216	.031	.027	-640	.140	.500	.310	.062	.050
-584	.140	.437	.216	.031	.050	-641	.140	.562	.185	.031	.027
-585	.140	.437	.216	.062	.027	-642	.140	.562	.185	.031	.050
-586	.140	.437	.216	.062	.050	-643	.140	.562	.185	.062	.027
-587	.140	.437	.248	.031	.027	-644	.140	.562	.185	.062	.050
-588	.140	.437	.248	.031	.050	-645	.140	.562	.216	.031	.027
-589	.140	.437	.248	.062	.027	-646	.140	.562	.216	.031	.050
-590	.140	.437	.248	.062	.050	-647	.140	.562	.216	.062	.027
-591	.140	.437	.279	.031	.027	-648	.140	.562	.216	.062	.050
-592	.140	.437	.279	.031	.050	-649	.140	.562	.248	.031	.027
-593	.140	.437	.279	.062	.027	-650	.140	.562	.248	.031	.050
-594	.140	.437	.279	.062	.050	-651	.140	.562	.248	.062	.027
-595	.140	.437	.310	.031	.027	-652	.140	.562	.248	.062	.050
-596	.140	.437	.310	.031	.050	-653	.140	.562	.279	.031	.027
-597	.140	.437	.310	.062	.027	-654	.140	.562	.279	.031	.050
-598	.140	.437	.310	.062	.050	-655	.140	.562	.279	.062	.027
-599	.140	.468	.185	.031	.027	-656	.140	.562	.279	.062	.050
-600	.140	.468	.185	.031	.050	-657	.140	.562	.310	.031	.027
-601	.140	.468	.185	.062	.027	-658	.140	.562	.310	.031	.050
-602	.140	.468	.185	.062	.050	-659	.140	.562	.310	.062	.027
-603	.140	.468	.216	.031	.027	-660	.140	.562	.310	.062	.050
-604	.140	.468	.216	.031	.050	-661	.140	.578	.185	.062	.047
-605	.140	.468	.216	.062	.027	-662	.140	.625	.185	.031	.027
-606	.140	.468	.216	.062	.050	-663	.140	.625	.185	.031	.050
-607	.140	.468	.248	.031	.027	-664	.140	.625	.185	.062	.027
-608	.140	.468	.248	.031	.050	-665	.140	.625	.185	.062	.050
-609	.140	.468	.248	.062	.027	-666	.140	.625	.216	.031	.027
-610	.140	.468	.248	.062	.047	-667	.140	.625	.216	.031	.050
-611	.140	.468	.248	.062	.050	-668	.140	.625	.216	.062	.027
-612	.140	.468	.279	.031	.027	-669	.140	.625	.216	.062	.050
-613	.140	.468	.279	.031	.050	-670	.140	.625	.248	.031	.027
-614	.140	.468	.279	.062	.027	-671	.140	.625	.248	.031	.050
-615	.140	.468	.279	.062	.050	-672	.140	.625	.248	.062	.027
-616	.140	.468	.310	.031	.027	-673	.140	.625	.248	.062	.050
-617	.140	.468	.310	.031	.050	-674	.140	.625	.279	.031	.027
-618	.140	.468	.310	.062	.027	-675	.140	.625	.279	.031	.050
-619	.140	.468	.310	.062	.050	-676	.140	.625	.279	.062	.027
-620	.140	.470	.312	.078	.281	-677	.140	.625	.279	.062	.050
-621	.140	.500	.185	.031	.027	-678	.140	.625	.310	.031	.027
-622	.140	.500	.185	.031	.050	-679	.140	.625	.310	.031	.050
-623	.140	.500	.185	.062	.027	-680	.140	.625	.310	.062	.027
-624	.140	.500	.185	.062	.050	-681	.140	.625	.310	.062	.050
-625	.140	.500	.216	.031	.027	-682	.141	.234	.187	.062	.063
-626	.140	.500	.216	.031	.050	-683	.141	.375	.240	.062	.031
-627	.140	.500	.216	.062	.027	-684	.141	.257	.187	.062	.031
-628	.140	.500	.216	.062	.050	-685	.141	.312	.187	.062	.031
-629	.140	.500	.248	.031	.027	-686	.141	.330	.206	.062	.031
-630	.140	.500	.248	.031	.050	-687	.141	.344	.189	.109	.047
-631	.140	.500	.248	.062	.027	-688	.141	.374	.246	.031	.031
-632	.140	.500	.248	.062	.050						
-633	.140	.500	.279	.031	.027						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.140 I. D. to .141 I. D.**

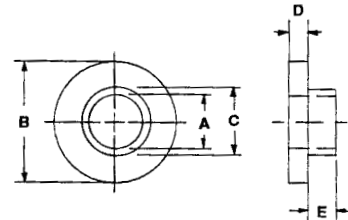
Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

\*Available in the following materials:

Material Code No.	Material Name	Material Code No.	Material Name
-11	Polypropylene	-38	G-10 Fiber Glass
-27	PVC	-40	PFA, (Teflon®)
-28	CPVC	-46	Polycarbonate
-18	Nylon 6/6, (natural)	-60	Nylon 6/6, 30% Short Glass-filled
-29	Teflon®	-62	Acetal
-37	PVDF		

\*Available in other materials.  
See materials list in index.  
Other sizes available on request.



Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-689	.141	.375	.237	.062	.032	-734	.160	.300	.194	.047	.062
-690	.141	.415	.243	.156	.047	-735	.160	.343	.220	.047	.031
-691	.141	.418	.243	.109	.062	-736	.160	.575	.430	.060	.200
-692	.141	.500	.234	.064	.045	-737	.160	.625	.435	.094	.031
-693	.141	.500	.318	.031	.016	-738	.161	.359	.218	.031	.015
-694	.141	.500	.318	.031	.047	-739	.161	.433	.275	.078	.091
-695	.142	.265	.205	.031	.156	-740	.162	.300	.210	.062	.031
-696	.143	.313	.175	.031	.031	-741	.162	.625	.250	.032	.046
-697	.144	.312	.187	.060	.030	-742	.163	.437	.213	.046	.046
-698	.144	.312	.234	.047	.062	-743	.165	.437	.265	.040	.050
-699	.144	.312	.234	.047	.125	-744	.165	.437	.312	.062	.031
-700	.144	.375	.250	.047	.100	-745	.165	.500	.250	.078	.016
-701	.144	.437	.250	.062	.125	-746	.165	.625	.281	.031	.016
-702	.144	.437	.312	.062	.050	-747	.167	.375	.246	.031	.062
-703	.145	.250	.203	.062	.125	-748	.167	.375	.246	.062	.031
-704	.145	.375	.250	.062	.062	-749	.167	.500	.250	.125	.437
-705	.145	.375	.250	.063	.031	-750	.168	.375	.250	.062	.047
-706	.145	.375	.265	.062	.016	-751	.168	.375	.250	.062	.125
-707	.145	.385	.240	.062	.031	-752	.168	.437	.250	.069	.031
-708	.145	.500	.275	.094	.047	-753	.169	.312	.218	.062	.031
-709	.145	.500	.375	.063	.031	-754	.169	.375	.215	.062	.031
-710	.146	.328	.218	.047	.047	-755	.169	.375	.215	.063	.062
-711	.147	.500	.230	.062	.031	-756	.169	.375	.250	.031	.031
-712	.147	.500	.358	.062	.078	-757	.169	.562	.312	.125	.031
-713	.148	.380	.220	.062	.203	-758	.170	.312	.250	.062	.063
-714	.149	.375	.250	.062	.025	-759	.170	.344	.202	.062	.140
-715	.150	.355	.250	.040	.090	-760	.170	.375	.234	.062	.031
-716	.150	.380	.244	.078	.047	-761	.171	.625	.248	.050	.031
-717	.150	.500	.330	.062	.062	-762	.171	.421	.279	.040	.190
-718	.150	.750	.250	.062	.250	-763	.171	.312	.216	.031	.027
-719	.152	.296	.203	.038	.085	-764	.171	.312	.216	.031	.050
-720	.152	.378	.199	.055	.027	-765	.171	.312	.216	.062	.027
-721	.152	.750	.359	.094	.062	-766	.171	.312	.216	.062	.050
-722	.153	.296	.219	.015	.007	-767	.171	.343	.216	.031	.027
-723	.156	.500	.250	.031	.094	-768	.171	.343	.216	.031	.050
-724	.156	.312	.250	.062	.187	-769	.171	.343	.216	.062	.027
-725	.156	.375	.250	.042	.010	-770	.171	.343	.216	.062	.050
-726	.156	.400	.243	.047	.047	-771	.171	.343	.248	.031	.027
-727	.156	.557	.422	.185	.055	-772	.171	.343	.248	.031	.050
-728	.156	.428	.245	.062	.031	-773	.171	.343	.248	.062	.027
-729	.156	.437	.245	.062	.031	-774	.171	.343	.248	.062	.050
-730	.156	.437	.250	.062	.063	-775	.171	.345	.209	.062	.047
-731	.156	.500	.250	.094	.031	-776	.171	.375	.195	.031	.062
-732	.156	.500	.312	.031	.031						
-733	.156	.562	.437	.062	.060						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.141 I.D. to .171 I.D.**

Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000

HIGH PERFORMANCE PLASTIC SHOULDER WASHERS (continued)

Part No. FN112 - (Size Code No.) - (Material Code No.)

Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.	Size Code No.	A Shank I.D.	B Flange O.D.	C Shank O.D.	D Flange Thk.	E Shank Thk.
-777	.171	.375	.216	.031	.027	-834	.171	.500	.310	.031	.027
-778	.171	.375	.216	.031	.050	-835	.171	.500	.310	.031	.050
-779	.171	.375	.216	.062	.027	-836	.171	.500	.310	.062	.027
-780	.171	.375	.216	.062	.050	-837	.171	.500	.310	.062	.050
-781	.171	.375	.248	.031	.027	-838	.171	.500	.375	.063	.031
-782	.171	.375	.248	.031	.050	-839	.171	.510	.250	.062	.406
-783	.171	.375	.248	.062	.027	-840	.171	.562	.216	.031	.027
-784	.171	.375	.248	.062	.050	-841	.171	.562	.216	.031	.050
-785	.171	.375	.250	.062	.031	-842	.171	.562	.216	.062	.027
-786	.171	.375	.279	.031	.027	-843	.171	.562	.216	.062	.050
-787	.171	.375	.279	.031	.050	-844	.171	.562	.248	.031	.027
-788	.171	.375	.279	.062	.027	-845	.171	.562	.248	.031	.050
-789	.171	.375	.279	.062	.050	-846	.171	.562	.248	.062	.027
-790	.171	.437	.216	.031	.027	-847	.171	.562	.248	.062	.050
-791	.171	.437	.216	.031	.050	-848	.171	.562	.279	.031	.027
-792	.171	.437	.216	.062	.027	-849	.171	.562	.279	.031	.050
-793	.171	.437	.216	.062	.050	-850	.171	.562	.279	.062	.027
-794	.171	.437	.248	.031	.027	-851	.171	.562	.279	.062	.050
-795	.171	.437	.248	.031	.050	-852	.171	.562	.310	.031	.027
-796	.171	.437	.248	.062	.027	-853	.171	.562	.310	.031	.050
-797	.171	.437	.248	.062	.050	-a54	.171	.562	.310	.062	.027
-798	.171	.437	.279	.031	.027	-855	.171	.562	.310	.062	.050
-799	.171	.437	.279	.031	.050	-856	.171	.625	.216	.031	.027
-800	.171	.437	.279	.062	.027	-857	.171	.625	.216	.031	.050
-801	.171	.437	.279	.062	.050	-858	.171	.625	.216	.062	.027
-802	.171	.437	.310	.031	.027	-859	.171	.625	.216	.062	.050
-803	.171	.437	.310	.031	.050	-860	.171	.625	.248	.031	.027
-804	.171	.437	.310	.062	.027	-861	.171	.625	.248	.031	.050
-805	.171	.437	.310	.062	.050	-862	.171	.625	.248	.062	.027
-806	.171	.468	.216	.031	.027	-863	.171	.625	.248	.062	.050
-807	.171	.468	.216	.031	.050	-864	.171	.625	.279	.031	.027
-808	.171	.468	.216	.062	.027	-865	.171	.625	.279	.031	.050
-809	.171	.468	.248	.031	.027	-866	.171	.625	.279	.062	.027
-810	.171	.468	.248	.031	.050	-867	.171	.625	.279	.062	.050
-811	.171	.468	.248	.062	.027	-868	.171	.625	.310	.031	.027
-812	.171	.468	.248	.062	.050	-869	.171	.625	.310	.031	.050
-813	.171	.468	.279	.031	.027	-870	.171	.625	.310	.062	.027
-814	.171	.468	.279	.031	.050	-871	.171	.625	.310	.062	.050
-815	.171	.468	.279	.062	.027	-872	.171	.630	.248	.031	.047
-816	.171	.468	.279	.062	.050	-873	.172	.500	.312	.140	.078
-817	.171	.468	.310	.031	.027	-874	.172	.375	.218	.063	.063
-818	.171	.468	.310	.031	.050	-875	.172	.375	.246	.063	.031
-819	.171	.468	.310	.062	.027	-876	.172	.625	.310	.062	.047
-820	.171	.468	.310	.062	.050	-877	.173	.344	.205	.062	.375
-821	.171	.500	.216	.031	.027	-878	.173	.345	.205	.062	.375
-822	.171	.500	.216	.031	.050	-879	.173	.500	.370	.063	.093
-823	.171	.500	.216	.062	.027	-880	.175	.340	.220	.062	.094
-824	.171	.500	.216	.062	.050	-881	.175	.437	.260	.038	.050
-825	.171	.500	.248	.031	.027	-882	.175	.500	.312	.060	.023
-826	.171	.500	.248	.031	.050	-883	.175	.500	.312	.060	.055
-827	.171	.500	.248	.062	.027	-884	.176	.505	.242	.028	.062
-828	.171	.500	.248	.062	.050	-885	.176	.500	.243	.028	.062
-829	.171	.500	.250	.100	.087	-886	.176	.493	.376	.094	.406
-830	.171	.500	.279	.031	.027	-887	.184	.312	.234	.031	.187
-831	.171	.500	.279	.031	.050	-888	.187	.312	.250	.062	.031
-832	.171	.500	.279	.062	.027						
-833	.171	.500	.279	.062	.050						

(continued next page)

Tolerances:  
Flange O.D. +/- .005  
Flange Thickness +/- .005

**.171 I.D. to .187 I.D.**

Shank O.D. - .005/+ .000  
Shank Thickness +/- .005  
Shank I.D. + .005/- .000