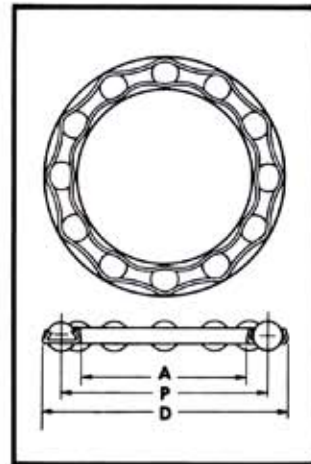
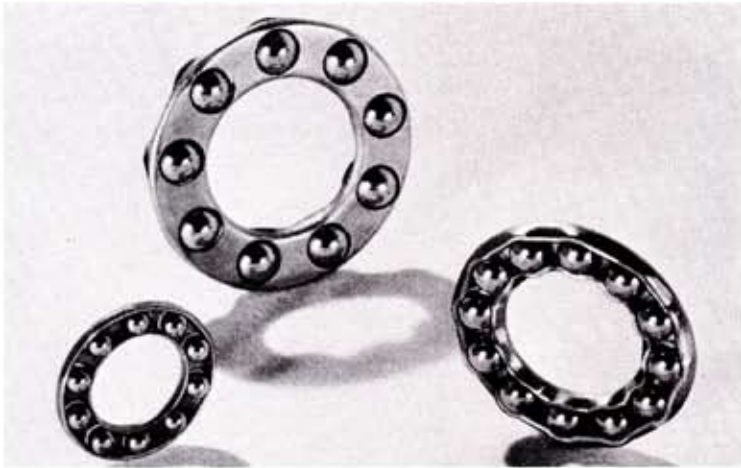


# THRUST RETAINERS



The National Thrust Retainer may be used with either a flat race or a grooved race, depending upon loads and speeds. It is also used with either a machined or stamped surface that is an integral part of the shaft or housing.

National Thrust Retainers are designed to provide positive ball retention with a minimum of friction. The channel design possesses exceptional strength and assures extremely long wearing qualities. The Retainer cages are cold formed to close tolerances from selected strips of steel, brass, or stainless steel. Retainers are also available in plastic materials. Thrust Retainers can be loaded with the proper grade and type of ball necessary for the application . . . carbon, chrome alloy, stainless steel, brass, etc.

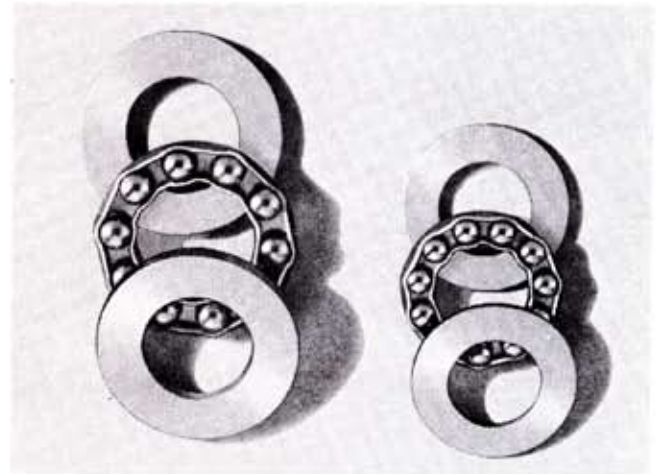
**Applications.** They range from electronic data processing equipment through portable power tools, hand tools, electromechanical devices, typewriters, phonographs, cameras, point-of-purchase displays, etc.

**Quality Controls.** All materials used in these retainers are specified and carefully selected. Balls are graded and sized in accordance with AFBMA standards. Rigid in-process and final inspection controls are adhered to. At final inspection retainers are checked for ball retention, freedom of ball movement, burr-free cages, uniformity of crimping plus additional inspections pertinent to the customer's requirement.

**Design Flexibility.** The long list of dimensional variations shown on these pages provide the Design Engineer with extreme flexibility. Other advantages are: very low starting friction and even lower operating friction; ease of lubrication; long life span; increased thrust capacity; product acceptance at both consumer and industrial levels.

## THRUST BEARINGS

National Thrust Bearings are inexpensive and recommended for light loads and speeds up to 2500 rpm. They combine a National Thrust Retainer with corresponding thrust washers. A properly designed thrust ball bearing has a much lower friction coefficient under starting and operating conditions than either a nylon or oilite bushing. It also has the decided advantage of standard replacement and availability, plus greater merchandising value (especially at the consumer level).



## THRUST WASHERS

National Thrust Washers are sold separately or in combination with our thrust retainers to form unground Thrust Bearings. By themselves, the washers can be used as races, spacers, etc. Dimensionally they approach the quality of ground washers; the thickness tolerance is closer on ground washers because of different processing.



## Plastic Thrust Retainers

1596 Manheim Pike  
 Lancaster, PA 17601  
 Phone (717)-569-0485  
 Fax (717)-569-1605  
[www.nationalbearings.com](http://www.nationalbearings.com)

NBC Part Number	"A" Inner Diameter	"D" Outer Diameter	"P" Pitch Diameter	Ball Count	Ball Diameter
408002	0.318	0.623	0.469	10	.094
408005	1.510	1.937	1.720	8	.125
408006	1.821	2.252	2.032	8	.125
408008	0.767	1.095	0.931	12	.125
408009	1.244	1.560	1.408	22	.094
408010	0.915	1.250	1.078	24	.094
408011	0.339	0.569	0.454	9	.063
408014	0.375	0.673	0.527	10	.094
408015	0.380	0.800	0.590	11	.094
408016	0.335	0.883	0.614	5	.188
408017	0.642	1.095	0.869	12	.125
408018	1.755	2.144	1.950	30	.125
408019	1.885	2.267	2.076	30	.125
408020	2.103	2.584	2.344	27	.156
408021	1.318	1.644	1.481	24	.094
408022	1.074	1.284	1.179	21	.063
408023	2.664	3.199	2.931	31	.188
408024	0.445	1.012	0.728	7	.188
408025	0.126	0.310	0.217	7	.063
408026	0.915	1.252		8	.094
408027	0.472	1.094	0.787	3	.219