

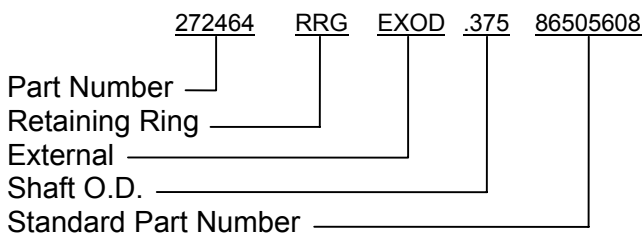
Retaining Ring, External Ph O/B Finish**1. SCOPE**

1.1 The fasteners defined by this specification are Phosphate and Film coated Retaining Rings.

1.2 The preferred Phosphate and Film coated Retaining Ring secures parts axially when assembled into pre-cut grooves on mating shafts.

2. DESIGNATION

2.1 Typical call-out on a drawing shall be:



NOTE: The above typical description is required for use in all company-wide computer generated documents. The description on hand-drawn assembly drawings should follow the same practice.

2.2 The Preface Chart on page 3 contains supplier cross-over information.

2.3 Table 2 contains the preferred part numbers to be used in future designs. Table 3 lists the non-preferred part numbers which should not be used in future designs.

2.4 When requesting a new part number, refer to the instructions in standard 86505922 (FNHA-3-A-005.00).

3. RELATED SPECIFICATIONS**3.1 REFERENCE STANDARDS**

86505922 (FNHA-3-D-005.00)—Assignment of Standard Part Numbers
MIL-R-21248—MS 16624 Type 1 Flat Class 2
MIL-P-16232D—Phosphate coating, Type Z
Fed Std 66—Steel, Carbon 1060 thru 1090

3.2 This standard replaces the following company standard:

Versatile

1-A-043

4. REQUIREMENTS**4.1 MATERIAL AND HARDNESS**

The material shall be spring steel SAE 1060 - 1090 and shall be austempered to 51–55 Rockwell C scale hardness for .25–.46 Dia. Rings, 47–53 Rockwell C for .50–3.43 Dia. and 45–50 Rockwell C for 3.50 Dia. and larger.

Twisting a sample Retaining Ring 180° quickly evidences austempering (preferred) as opposed to any other method of hardening.

4.1.1 COATING

The coating shall be a black non-reflective, corrosion resistant phosphate and oil 86508340 (FNHA-2-H-501.02) per standard 86508306 (FNHA-2-H-501.00). All parts with this coating will have a rust-preventive finish of either of the following:

- 1) a non-tacky dry, clear film
- 2) a drying-type oil-base film.

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APP.	DRAWN		WLS	3/96					
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								PART NUMBER	
								86505608	

4.2 INSPECTION AND ASSEMBLY

Total Indicator Reading (T.I.R.) is the maximum allowable deviation of concentricity between groove and shaft. Rings should not be over-expanded during installation. If the groove has been machined to the recommended diameter, play between the ring and groove after installation indicates the ring has been expanded excessively which may lead to application failure.

4.3 SHEAR STRENGTH

Standard Basic austempered phosphate coated spring steel retaining rings shall have a shear strength of 120,000 psi when .035 inches thick and thinner. Rings .042 inches thick and thicker shall have a shear strength of 150,000 psi.

4.4 DISH

Dish is considered any height difference occurring between the inner and outer peripheries of the Retaining Ring (Figure A). For specific limits, see Table A.

Figure A: Dish

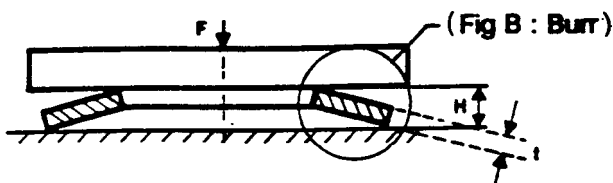


Table A: Limitations of Dish

Ring Thk (t)	Max Dish (H-t)	Thrust Load (F)
in	in	lbs
.010/.015	.002	2
.025/.035	.003	5
.042/.093	.005	10
.109/.125	.010	15
.156/.187	.015	20

4.5 BURR

Burr is a raised solid protrusion caused by the metal shearing process (Figure B). For specific limits, see Table B.

Figure B: Burr

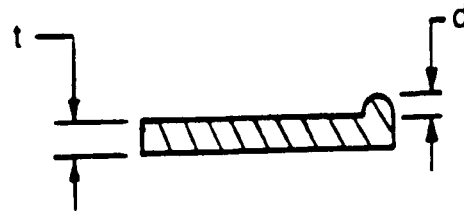


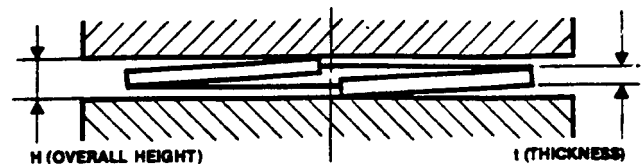
Table B: Limitation of Burr

Material Thk (t)	Max. Allow. Burr (d)
in	in
.010	.001
.025	.0015
.035	.002
.125 and thicker	.003

4.6 OVERALL HEIGHT

Overall height shall not exceed $3 \times t$ as illustrated in Figure C.

Figure C: Overall Height



4.7 PERMANENT SET

Permanent set is the difference between the Retaining Ring contact diameter in the free condition and the same diameter after the Retaining Ring has been expanded or compressed. After the Retaining Ring has been installed on the specified shaft, it should resist movement when acted upon by a force in any direction.



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4.8 MECHANICAL DIMENSIONS

The general dimensions shall meet the requirements in Table 1.

5. SUPPLIER RESPONSIBILITY

5.1 Suppliers shall perform the necessary test for sample approval for initial lots. After this approval, suppliers are not required to perform the specific test, but ascertain that their product will conform to the specific limits. These specific requirements will be used to reconcile any disputed values.

5.2 All materials supplied to this specification shall be equivalent in all characteristics to the material upon which approval was originally granted. Prior to making of any changes in the properties, composition, construction, color, dimensions, processing, or labeling of the material originally approved under this specification, the supplier shall notify Purchasing and the affected standardization engineering activity of the proposed changes and obtain the written acknowledgement of the Material Engineering activity. Test data, test samples, and a new identification code are to be submitted with the request.

Preface Chart: Supplier Interchangeability

Rotor Clip	Waldes	I.R.R.	Anderton	MIL Standard
☆ SH	5100	3100	1400	16624
SHI	5108	4100	1408	16626
SHR	5160	7200	1460	3217
SHM	5560	—	—	—
RE	5144	1200	1540	3215
E	5133	1000	1500	16633
C	5103	2000	1800	16632
LC	5107	—	—	90708
PO	5304	—	—	—
POL	T-5304	—	—	—
EL	5139	—	—	3216
BE	5131	1001	1501	16634
BSH	5101	3101	1401	16628
VSH	5102	—	1402	16630
SHF	5555	7100	1440	90707

☆ Indicates New Holland standard parts

 NEW HOLLAND	NAME				PART NUMBER	
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