

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-F-15.101-GS/PL
		Former Designation: ESP-F-15.101-GS
TITLE:	Plain Washers – English Series (Noun Code 9720)	CURRENT REV No.: 1803
		DATE: March 2018
WRITTEN/EDITED BY: A. Bourdon	APPROVED BY: R. Goluch	SUPERSEDES: 1506 June 2015
PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION		
<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		

1.0 GENERAL: Plain washers covered by this specification are intended for general industrial applications and are the same as described in American National Standard B 18.22.1.

2.0 CONTENTS:

	Page
General	1
Material	1
Policy for Selecting Parts for New Design	1
Service Parts Substitution Policy	2
Finishes	2
Restricted Chemical Substances	2
Part Number Selection	2
Quality	2
Conversion List	2
Preferred Sizes	3
Non-Preferred Sizes	5
Non-Designated Type	9
Technical Information	10

3.0 MATERIAL: Steel (CST) 1010-1020.

Stainless steel (SST) - Any 300 series or 400 series stainless steel per MPAPS A-37. Material will be *passivated in accordance with the specification in MPAPS S-A-0.101.

Brass (BRS) and Copper (COP) - Standard with manufacturer.

4.0 POLICY FOR SELECTING PARTS FOR NEW DESIGN: Approved parts are so designated to reduce variety of parts and assure maximum availability, interchangeability and cost savings in volume buying.

For new design, parts shall be selected from "Approved" part list only.

Material: Steel (CST)
 Finish: Zinc Trivalent (ZN6A), Plain (PLN)
 Type: A - Narrow (AN), A - Wide (AW)
 Sizes: See page 3 FOR DIMENSIONS

This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2018 by Navistar, Inc.

MARCH 2018

NUMBER: MPAPS S-F-15.101-GS/PL	TITLE: Plain Washers	REVISION: 1803
---	---------------------------------------	---------------------------------

5.0 SERVICE PARTS SUBSTITUTION POLICY: In the event that engineering does not indicate a "Do not substitute" in engineering specifications, the following substitutions may be implemented in service. This policy is the result of a proposal circulated April 20, 1981, and subsequently approved by engineering departments worldwide.

<u>To Be Replaced</u>	<u>Plain Washers</u>	<u>Service Replacement</u>
------------------------------	-----------------------------	-----------------------------------

Plain Finish (PLN) All Types

Zinc trichromate finish (ZN6A) all types or phosphate coating (PHC) (if ZND is not set up for service).

6.0 FINISHES: Washers will be furnished plain, plated or coated in accordance with the MPAPS and class listed below:

Zinc w/Trivalent Chromate (ZN6A) – MPAPS G-20, Class 6A.

Phosphate Coating (PHC) – MPAPS G-1, Class Z-2.

Chrome Bright (CRB) on steel – MPAPS G-19, Part III, Class 13 CRB

Nickel Bright (NIB) on steel – MPAPS G-19, Part III, Class 5 NIB.

Nickel Bright (NIB) on brass – MPAPS G-19, Part III, Class 5 NIB.

Nickel Dull (NID) on steel – MPAPS G-19, Part III, Class 5 NID.

Blued (BLU) on steel - Standard with manufacturer.

7.0 RESTRICTED CHEMICAL SUBSTANCES: Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the MPAPS B-50 specification.

8.0 PART NUMBER SELECTION: Plain washer part numbers have been separated into three sections:

1. Type A, Selected Sizes - Preferred, see section 11.0
2. Types A and B - Non-Preferred Sizes, Materials or Finishes, see section 12.0
3. Non-Designated Type - Non-Preferred. see section 13.0

9.0 QUALITY: Washers will be free from burrs, loose scale, sharp edges and all other defects that might affect their serviceability. Washers will be flat within .005 inch for basic outside diameters up to and including .875 inch and within .010 inch for larger outside diameters.

10.0 CONVERSION LIST:

Inside Diameter	Outside Diameter	Thickness	Type-Finish	410SST Part Number	Replacement Part Number
.156	.375	.036	A-PLN	27305R1	221431
.281	.625	.051	AN-PLN	27308R1	178474
.344	.688	.051	AN-PLN	27309R1	28588R1
.406	.812	.051	AN-PLN	27503R1	23402R1

Plain flat washers of 410 stainless steel material removed due to problems in procurement. Replacement washers may be any 300 or 400 series stainless steel per MPAPS A-37.

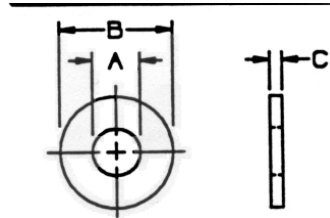
This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2018 by Navistar, Inc.

MARCH 2018

NUMBER: MPAPS S-F-15.101-GS/PL	TITLE: Plain Washers	REVISION: 1803
---	---------------------------------------	---------------------------------

11.0 PREFERRED SIZES:

11.1 Type A



TYPE A

Dimensions in inches:

Nominal Washer Size	Series	Inside Diameter			Outside Diameter			Thickness		
		A			B			C		
		Nominal	Tolerance		Nominal	Tolerance		Nominal	Max	Min
			Plus	Minus		Plus	Minus			
* No. 1		.078	.000	.005	.188	.000	.005	.020	.025	.016
* No. 2		.094	.000	.005	.250	.000	.005	.020	.025	.016
* No. 4		.125	.008	.005	.312	.008	.005	.032	.040	.025
No. 6		.156	.008	.005	.375	.015	.005	.049	.065	.036
No. 8		.188	.008	.005	.438	.015	.005	.049	.065	.036
No. 10		.219	.008	.005	.500	.015	.005	.049	.065	.036
* 3/16		.250	.015	.005	.562	.015	.005	.049	.065	.036
* No. 12		.250	.015	.005	.562	.015	.005	.065	.080	.051
1/4	Narrow	.281	.015	.005	.625	.015	.005	.065	.080	.051
1/4	Wide	.312	.015	.005	.734	.015	.007	.065	.080	.051
5/16	Narrow	.344	.015	.005	.688	.015	.007	.065	.080	.051
5/16	Wide	.375	.015	.005	.875	.030	.007	.083	.104	.064
3/8	Narrow	.406	.015	.005	.812	.015	.007	.065	.080	.051
3/8	Wide	.438	.015	.005	1.000	.030	.007	.083	.104	.064
7/16	Narrow	.469	.015	.005	.922	.015	.007	.065	.080	.051
7/16	Wide	.500	.015	.005	1.250	.030	.007	.083	.104	.064
1/2	Narrow	.531	.015	.005	1.062	.030	.007	.095	.121	.074
1/2	Wide	.562	.015	.005	1.375	.030	.007	.109	.132	.086
* 9/16	Narrow	.594	.015	.005	1.156	.030	.007	.095	.121	.074
* 9/16	Wide	.625	.015	.005	1.469	.030	.007	.109	.132	.086
5/8	Narrow	.656	.030	.007	1.312	.030	.007	.095	.121	.074
5/8	Wide	.688	.030	.007	1.750	.030	.007	.134	.160	.108
3/4	Narrow	.812	.030	.007	1.469	.030	.007	.134	.160	.108
3/4	Wide	.812	.030	.007	2.000	.030	.007	.148	.177	.122
* 7/8	Narrow	.938	.030	.007	1.750	.030	.007	.134	.160	.108
* 7/8	Wide	.938	.030	.007	2.250	.030	.007	.165	.192	.136
1	Narrow	1.062	.030	.007	2.000	.030	.007	.134	.160	.108
1	Wide	1.062	.030	.007	2.500	.030	.007	.165	.192	.136
* 1- 1/8	Narrow	1.250	.030	.007	2.250	.030	.007	.134	.160	.108
* 1- 1/8	Wide	1.250	.030	.007	2.750	.030	.007	.165	.192	.136
1- 1/4	Narrow	1.375	.030	.007	2.500	.030	.007	.165	.192	.136
1- 1/4	Wide	1.375	.030	.007	3.000	.030	.007	.165	.192	.136
* 1- 3/8	Narrow	1.500	.030	.007	2.750	.030	.007	.165	.192	.136
* 1- 3/8	Wide	1.500	.045	.010	3.250	.045	.010	.180	.213	.153
1- 1/2	Narrow	1.625	.030	.007	3.000	.030	.007	.165	.192	.136
1- 1/2	Wide	1.625	.045	.010	3.500	.045	.010	.180	.213	.153
* 1- 5/8		1.750	.045	.010	3.750	.045	.010	.180	.213	.153
* 1- 3/4		1.875	.045	.010	4.000	.045	.010	.180	.213	.153
* 1- 3/4		2.000	.045	.010	4.250	.045	.010	.180	.213	.153
* 2		2.125	.045	.010	4.500	.045	.010	.180	.213	.153
* 2- 1/4		2.375	.045	.010	4.750	.045	.010	.220	.248	.193
* 2- 1/2		2.625	.045	.010	5.000	.045	.010	.238	.280	.210
* 2- 3/4		2.875	.065	.010	5.250	.065	.010	.259	.310	.228
* 3		3.125	.065	.010	5.500	.065	.010	.284	.327	.249

* Non-preferred Sizes

This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2018 by Navistar, Inc

MARCH 2018



Documents

Page 3 of 10
Document Sharing Hub