



National Defence

Défense nationale

National Defence Headquarters
Ottawa, Ontario
K1A 0K2

Quartier général de la Défense nationale
Ottawa (Ontario)
K1A 0K2

REQUEST FOR PROPOSAL DEMANDE DE PROPOSITION

RETURN BIDS TO: RETOURNER LES SOUMISSIONS À:

Bid Receiving Mailbox – Réception des soumissions

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Proposal To: National Defence Canada

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods and services listed herein and on any attached sheets at the price(s) set out therefore.

Proposition à : Défense nationale Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens et services énumérés ici et sur toute feuille ci-annexée, au(x) prix indique(s).

Solicitation Closes – L'invitation prend fin

At – à: 2:00 PM EDT –
Eastern Daylight Time – Heure avancé de l'Est

On – le: August 10, 2020 – le 10 aout, 2020

Title/Titre HLVW Trunnions
Solicitation No – N° de l'invitation W8486-217411/A Amendment 002
Date of Amendment – Date de Modification June 26, 2020 - 26 juin, 2020
Address Enquiries to – Adresser toutes questions à National Defence Headquarters 101 Colonel By Dr Ottawa, Ontario K1A 0K2 Attn: DLP 5-2-1
Telephone- -No. – N° de téléphone 819-939-6471
Destination Specified Herein Précisé dans les présentes

Instructions:

Municipal taxes are not applicable. Unless otherwise specified herein all prices quoted must include all applicable Canadian customs duties, GST/HST, excise taxes and are to be delivered Delivery Duty Paid including all delivery charges to destination(s) as indicated. The amount of the Goods and Services Tax/Harmonized Sales Tax is to be shown as a separate item.

Instructions:

Les taxes municipales ne s'appliquent pas. Sauf indication contraire, les prix indiqués doivent comprendre les droits de douane canadiens, la TPS/TVH et la taxe d'accise. Les biens doivent être livrés « rendu droits acquittés », tous frais de livraison compris, à la ou aux destinations indiquées. Le montant de la taxe sur les produits et services/taxe de vente harmonisée doit être indiqué séparément.

Delivery Required – Livraison exigée See Herein	Delivery Offered – Livraison proposée
Vendor Name and Address – Raison sociale et adresse du fournisseur	
Name and title of person authorized to sign on behalf of vendor (type or print) – Nom et titre de la personne autorisée à signer au nom du fournisseur (caractère d'imprimerie)	
Name / Nom	_____
Title / Titre	_____
Signature	_____
Date	_____

Amendment 002

This amendment is raised to provide additional information about items 2-9.


All other terms and conditions remain unchanged.

Modification 002

Cet amendement vise à fournir des informations supplémentaires sur les articles 2-9.



Tous les autres termes et conditions demeurent inchangés.


Item/Article 2, GSIN 5305: NSN: 20-A0V-3799
DIN 960.10.9.Z.01 M18 Hex Cap Screw Part Number 11114053



Shop Categories

[All Products](#) > [Fasteners](#) > [Bolts](#) > [Hex Cap Screws and Hex Bolts](#)




Compliance 

CAD Drawings [Product Standards](#)

- 3D
- 2D Front View
- 2D Left Side View
- 2D Sales Drawing

UNSPSC: 31161501
Manufacturer: Fastenal Approved Vendor
This is an Expanded Catalog Item

Product Attributes	
Dia/Thread Size	M18-1.5
Finish	Zinc
Grade	Class 10.9
Length	65mm
Material	Steel
Specification	DIN 960
System of Measurement	Metric
Thread	Extra Fine
Thread Type	Partial Thread
Type	Hex Cap Screw
Wrench Size	27mm
Product Weight	0.357
UOM	each

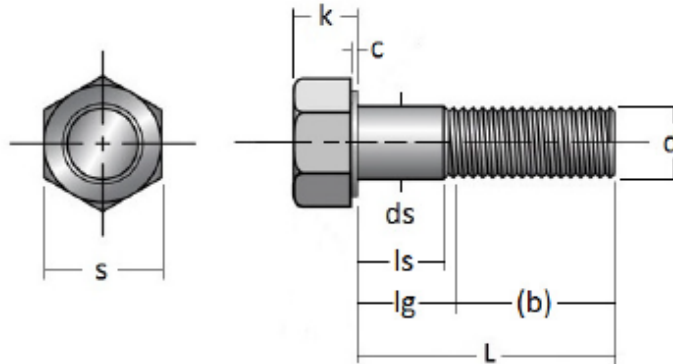
Notes 

Hex Head Cap Screws are designed for easy assembly into a tapped hole. Specification 960 represents Partial Thread. Class 10.9 has a minimum tensile strength of 1040 MPa. Zinc plating retards the corrosion rate in a normal atmosphere.

Page 1 of 3	Fastenal Product Standard	REV-01
Date: March 26, 2019	FASTENAL	M.HCS.960.10.9.Z

Metric, Hex Cap Screw, DIN 960 Partially Threaded, Fine Thread, Class 10.9, Zinc

This product standard contains the required dimensional, mechanical, performance, and chemical characteristics of the products shown in this purchase order (as applicable to the product). Unless specified below, current revisions of national or international standards shall be applicable as of the date of Fastenal's purchase order and must be adhered to in their entirety. If the order received does not meet these requirements, corrective action may be issued which could jeopardize your status as an approved supplier to Fastenal.



Size	c		k				s		
	Washer Face Thickness		Head Height				Max.	Width Across Flats	
	Min.	Max.	Grade A		Grade B			Min.	
			Min.	Max.	Min.	Max.	Grade A	Grade B	
M8	0.15	0.60	5.15	5.45	5.06	5.54	13	12.73	12.57
M10	0.15	0.60	6.22	6.58	6.11	6.69	17	16.73	16.57
M12	0.15	0.60	7.32	7.68	7.21	7.79	19	18.67	18.48
M14	0.15	0.60	8.62	8.98	8.51	9.09	22	21.67	21.16
M16	0.20	0.80	9.82	10.18	9.71	10.29	24	23.67	23.16
M18	0.20	0.80	11.28	11.72	11.15	11.85	27	26.67	26.16
M20	0.20	0.80	12.28	12.72	12.15	12.85	30	29.67	29.16
M22	0.20	0.80	13.78	14.22	13.65	14.35	32	31.61	31.00
M24	0.20	0.80	14.78	15.22	14.65	15.35	36	35.38	35.00

Size	d				ds		
	Major Diameter				Body Diameter		
	Fine		Extra Fine		Min.		Max.
	Min.	Max.	Min.	Max.	Grade A	Grade B	
M8	7.794	7.974	-	-	7.78	7.64	8
M10	9.760	9.972	9.794	9.974	9.78	9.64	10
M12	11.732	11.968	11.760	11.972	11.73	11.57	12
M14	13.732	13.968	-	-	13.73	13.57	14
M16	15.732	15.968	-	-	15.73	15.57	16
M18	17.682	17.962	17.732	17.968	17.73	17.75	18
M20	19.682	19.962	19.732	19.968	19.67	19.48	20
M22	21.682	21.962	21.732	21.968	21.67	21.48	22
M24	23.682	23.962	-	-	23.67	23.48	24

Shank Lengths ls and lg

RECORD OF REVISION CHANGES TO THIS DOCUMENT ARE LOCATED ON THE LAST PAGE

Page 2 of 3	Fastenal Product Standard	REV-01
Date: March 26, 2019	FASTENAL	M.HCS.960.10.9.Z

I					M8 x 1		M10 x 1.25		M12 x 1.5		M14 x 1.5		M16 x 1.5	
					Product Grade		M10 x 1		M12 x 1.25					
Nom.	A		B		ls	lg	ls	lg	ls	lg	ls	lg	ls	lg
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
35	34.5	35.5	-	-	8	13	-	-	-	-	-	-	-	-
40	39.5	40.5	-	-	13	18	7.75	14	-	-	-	-	-	-
45	44.5	45.5	-	-	18	23	12.75	19	7.5	15	-	-	-	-
50	49.5	50.5	-	-	23	28	17.75	24	12.5	20	8.5	16	-	-
55	54.4	55.6	-	-	28	33	22.75	29	17.5	25	13.5	21	9.5	17
60	59.4	60.6	-	-	33	38	27.75	34	22.5	30	18.5	26	14.5	22
65	64.4	65.6	-	-	38	43	32.75	39	27.5	35	23.5	31	19.5	27
70	69.4	70.6	-	-	43	48	37.75	44	32.5	40	28.5	36	24.5	32
75	74.4	75.6	-	-	48	53	42.75	49	37.5	45	33.5	41	29.5	37
80	79.4	80.6	-	-	53	58	47.75	54	42.5	50	38.5	46	34.5	42
85	84.3	85.7	83.25	86.75	58	63	52.75	59	47.5	55	43.5	51	39.5	47
90	89.3	90.7	88.25	91.75	63	68	57.75	64	52.5	60	48.5	56	44.5	52
95	94.3	95.7	93.25	93.75	68	73	62.75	69	57.5	65	53.5	61	49.5	57
100	99.3	100.7	98.25	101.75	73	78	67.75	74	62.5	70	58.5	66	54.5	62
110	109.3	110.7	108.25	111.75	-	-	77.75	84	72.5	80	68.5	76	64.5	72
120	119.3	120.7	118.25	121.75	-	-	87.75	94	82.5	90	78.5	86	74.5	82

I					M18 x 2		M20 X 2		M22 x 2		M24 x 2	
					Product Grade		M20 X 1.5		M22 x 1.5		M24 x 1.5	
Nom.	A		B		ls	lg	ls	lg	ls	lg	ls	lg
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
35	34.5	35.5	-	-	-	-	-	-	-	-	-	-
40	39.5	40.5	-	-	-	-	-	-	-	-	-	-
45	44.5	45.5	-	-	-	-	-	-	-	-	-	-
50	49.5	50.5	-	-	-	-	-	-	-	-	-	-
55	54.4	55.6	-	-	-	-	-	-	-	-	-	-
60	59.4	60.6	-	-	-	-	-	-	-	-	-	-
65	64.4	65.6	-	-	13	23	9	19	-	-	-	-
70	69.4	70.6	-	-	18	28	14	24	10	20	-	-
75	74.4	75.6	-	-	23	33	19	29	15	25	-	-
80	79.4	80.6	-	-	28	38	24	34	20	30	16	26
85	84.3	85.7	83.25	86.75	33	43	29	39	25	35	21	31
90	89.3	90.7	88.25	91.75	38	48	34	44	30	40	26	36
95	94.3	95.7	93.25	93.75	43	53	39	49	35	45	31	41
100	99.3	100.7	98.25	101.75	48	58	44	54	40	50	36	46
110	109.3	110.7	108.25	111.75	58	68	54	64	50	60	46	56
120	119.3	120.7	118.25	121.75	68	78	64	74	60	70	56	66

Screws with nominal lengths above with stepped line must be threaded up to the head. The lg and ls values for bolts with nominal lengths below the stepped line must be determined by the following:
 $lg \text{ max.} = l - b$; $ls \text{ min.} = lb \text{ max.} - 5 p$

Page 3 of 3	Fastenal Product Standard	REV-01
Date: March 26, 2019	<i>FASTENAL</i>	M.HCS.960.10.9.Z

Specification Requirements:

- Dimensions: DIN 960; For dimensions not shown above, refer to DIN 960
- Threads: 6g per ISO 724; ISO 965-1
- Material & Mechanical Properties: ISO 898-1; Class 10.9
- Head Marking: Manufacturer's ID and 10.9
- Finish: ISO 4042/Zn5/An
- Material Test Reports: The MTR must have documented lot traceability, dimensional results, full chemical test results and full mechanical test results to the specification(s) above. In addition, the MTR shall be in full compliance with Fastenal's MTR Requirements.
- Quality Assurance Provisions: Category 3 of ASME B18.18

Revision Level Changes to this Document

Document Name	Revision Level	Revision Date	Rationale for Revision
M.HCS.960.10.9.Z	00	6/18/2018	Revised title and changed threads to 6g per ISO 724; ISO 965-1.
M.HCS.960.10.9.Z	01	3/26/2019	Revised zinc plating designation.

The rationale above may not include all of the changes within each revision. A complete review of the Fastenal Product Standard is required.

Item/Article 3, GSIN: 5305, NSN: 5305-20-A0V-3869
DIN 934 M18 X1.5 Steel Class Hex Nut Part Number 11507026

FASTENAL Catalogs Rebates & Flyers


Browse Products 

Home > All Products > Fasteners > Nuts > Hex Nuts



M18 x 1.5 Steel Class 10 DIN 934 Hex Nut

Fastenal Part No. (SKU) 11507026
UNSPSC 31161727
Manufacturer Fastenal Approved Vendor

 This is a Catalog Item

Product Attributes

Dia/Thread Size	M18-1.5
Finish	Plain
Grade	Class 10
Material	Steel
Specification	DIN 934
System of Measurement	Metric
Thickness	15mm
Thread	Fine
Type	Hex Nut
Wrench Size	27mm
Product Weight	0.09
UOM	each

Compliance



CAD Drawings

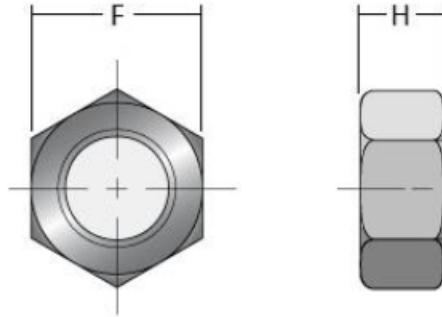
Product Standards

 Fastenal Product Standard

Page 1 of 3	Fastenal Product Standard	REV-00
Date: February 11, 2019	FASTENAL	M.FHN.934.10.P

Metric, Finished Hex Nut, DIN 934, Class 10, Plain

This product standard contains the required dimensional, mechanical, performance, and chemical characteristics of the products shown in this purchase order (as applicable to the product). Unless specified below, current revisions of national or international standards shall be applicable as of the date of Fastenal's purchase order and must be adhered to in their entirety. If the order received does not meet these requirements, corrective action may be issued which could jeopardize your status as an approved supplier to Fastenal.



Size	F		H	
	Width Across Flats		Thickness	
	Max.	Min.	Max.	Min.
M1	2.5	2.4	0.8	0.55
M1.2	3	2.9	1	0.75
M1.4	3	2.9	1.2	0.95
M1.6	3.2	3.02	1.3	1.05
M2	4	3.82	1.6	1.35
M2.5	5	4.82	2	1.75
M3	5.5	5.32	2.4	2.15
M3.5	6	5.82	2.8	2.55
M4	7	6.78	3.2	2.9
M5	8	7.78	4	3.7
M6	10	9.78	5	4.7
M7	11	10.73	5.5	5.2
M8	13	12.73	6.5	6.14
M10	17	16.73	8	7.64
M12	19	18.67	10	9.64
M14	22	21.67	11	10.3

Page 2 of 3	Fastenal Product Standard	REV-00
Date: February 11, 2019	FASTENAL	M.FHN.934.10.P

Size	F		H	
	Width Across Flats		Thickness	
	Max.	Min.	Max.	Min.
M16	24	23.67	13	12.3
M18	27	26.16	15	14.3
M20	30	29.16	16	14.9
M22	32	31	18	16.9
M24	36	35	19	17.7
M27	41	40	22	20.7
M30	46	45	24	22.7
M33	50	49	26	24.7
M36	55	53.8	29	27.4
M39	60	58.8	31	29.4
M42	65	63.1	34	32.4
M45	70	68.1	36	34.4
M48	75	73.1	38	36.4
M52	80	78.1	42	40.4
M56	85	82.8	45	43.4
M60	90	87.8	48	46.4
M64	95	92.8	51	49.1
M68	100	97.8	54	52.1
M72	105	102.8	58	56.1
M76	110	107.8	61	59.1
M80	115	112.8	64	62.1
M85	120	117.8	68	66.1
M90	130	127.5	72	70.1
M100	145	142.5	80	78.1
M110	155	152.5	88	85.8
M125	180	177.5	100	97.8
M140	200	195.4	112	109.8
M160	230	225.4	128	125.5

Specification Requirements:

- Dimensions: DIN 934
- Threads: 6H
- Material & Mechanical Properties: All nuts regardless of diameters shall meet the material and all mechanical requirements of DIN 267, Part 4; using the tensile stress area and the hardness of Class 10
- Product Marking: Manufacturer ID and Class 10 per DIN 267 Pt 4 on M5 nominal diameter and larger
- Finish: Light Protective Oil
- Material Test Reports: The MTR must have documented lot traceability, dimensional results, full chemical test results and full mechanical test results to the specification(s) above. In addition, the MTR shall be in full compliance with Fastenal's MTR Requirements.

Page 3 of 3	Fastenal Product Standard	REV-00
Date: February 11, 2019	FASTENAL	M.FHN.934.10.P

Revision Level Changes to this Document

Document Name	Revision Level	Revision Date	Rationale for Revision
M.FHN.934.10.P	00	2/11/2019	Revised title and added sizes.

The rationale above may not include all of the changes within each revision. A complete review of the Fastenal Product Standard is required.

Item/Article 4, GSIN: 5305, NSN: 5305-20-A0V-3801
Extra Thick structural flat washer Part Number 11128616

The screenshot shows the Fastenal website interface. At the top is a blue navigation bar with the Fastenal logo and links for Catalogs, Rebates & Flyers, Services & Resources, Careers, Feedback, and Help. Below this is a search bar with a magnifying glass icon and a 'Browse Products' button. To the right of the search bar are links for 'My Account' (Sign In or Register), 'My Branch' (Find a Branch), and 'My Cart' (Items (0)).

The main content area features a breadcrumb trail: Home > All Products > Fasteners > Washers > Flat Washers. On the left is a large image of the washer. To its right is the product title: **3/4" Thru-Hardened Type 1 Yellow Zinc Steel Extra Thick Structural Flat Washer Made in USA**. Below the title are the following details:

- Fastenal Part No. (SKU): 11128616
- UNSPSC: 31161807
- Manufacturer: Fastenal Approved Vendor

A blue icon indicates 'This is a Catalog Item'. Below this is a 'Product Attributes' table:

Bolt Compatibility	A325
Bolt Size	3/4"
Finish	Mechanical Yellow Zinc
Grade	Type 1
Inner Diameter	0.829"
Material	Steel
Nominal Thickness	0.340"
Outer Diameter	1.469"
Specification	Thru-Hardened
Style	SAE Extra Thick
System of Measurement	Imperial (Inch)
Type	Structural Flat Washer
Product Weight	0.1143
UOM	each

To the right of the product details is the pricing and purchase information:

- Wholesale: \$3.16 / each
- Online Price: \$2.21 / each
- QTY: 1 (with a dropdown arrow)
- ADD button

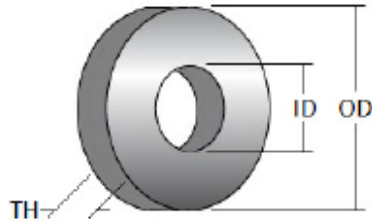
Below the pricing is a 'Supply Chain' section with 'Availability' (Available Inventory) and 'Direct Ship' (Ships TOMORROW) options. A note states: 'Some restrictions apply, login to see shipping methods.'

On the left side of the product image, there are two sections: 'Compliance' with icons for various standards, and 'Product Standards' with a link to 'Fastenal Product Standard'.

Page 1 of 2	Fastenal Product Standard	REV-00
Date: February 27, 2017	FASTENAL	USA.FW.THLET.MYZ

Flat Washer, Thru-Hardened, Extra Thick, Mechanically Deposited Yellow Zinc, Manufactured in the U.S.A.

The information below lists the required dimensional, chemical and physical characteristics of the products in this purchase order. If the order received does not meet these requirements, it may result in a supplier corrective action request, which could jeopardize your status as an approved vendor. Unless otherwise specified, all referenced consensus standards must be adhered to in their entirety.



Size	ID		OD		Thickness	
	Min.	Max.	Min.	Max.	Min.	Max.
1/4	0.281	0.313	0.593	0.657	0.090	0.110
5/16	0.344	0.376	0.656	0.720	0.090	0.110
3/8	0.406	0.438	0.781	0.845	0.110	0.126
7/16	0.469	0.501	0.890	0.954	0.110	0.126
1/2	0.531	0.563	1.031	1.095	0.305	0.375
9/16	0.625	0.657	1.156	1.220	0.305	0.375
5/8	0.688	0.720	1.281	1.345	0.305	0.375
3/4	0.813	0.845	1.436	1.500	0.305	0.375
7/8	0.938	0.970	1.718	1.782	0.305	0.375
1	1.063	1.126	1.937	2.063	0.305	0.375
1-1/8	1.188	1.251	2.187	2.313	0.305	0.375
1-1/4	1.375	1.438	2.437	2.563	0.305	0.375
1-3/8	1.500	1.563	2.687	2.813	0.305	0.375
1-1/2	1.625	1.675	2.937	3.063	0.305	0.375
1-3/4	1.875	1.938	3.312	3.348	0.305	0.375
2	2.125	2.188	3.687	3.813	0.305	0.375
2-1/4	2.375	2.438	3.937	4.063	0.305	0.375
2-1/2	2.625	2.688	4.437	4.563	0.313	0.375
2-3/4	2.875	2.938	4.937	5.063	0.313	0.375
3	3.125	3.188	5.437	5.563	0.313	0.375
3-1/4	3.375	3.500	6.125	6.125	0.313	0.375
3-1/2	3.625	3.750	6.625	6.625	0.313	0.375
3-3/4	3.875	4.000	7.125	7.125	0.313	0.375
4	4.125	4.250	7.625	7.625	0.313	0.375


Specification Requirements:

- Dimensions: See Table Above
- Material: Medium Carbon Steel
- Mechanical Properties: Hardness: HRC 38 to 45
- Product Marking: Manufacturer ID

Page 2 of 2	Fastenal Product Standard	REV-00
Date: February 27, 2017	FASTENAL	USA.FW.THLET.MYZ



- Manufacturer: Manufactured in the U.S.A.
- Finish: Mechanical Zinc per ASTM B695, Class 5, Type 2 (Yellow)
- Material Test Reports: The MTR must have documented lot traceability, dimensional results, full chemical test results and full mechanical test results to the specification(s) above. In addition, the MTR shall be in full compliance with Fastenal's MTR Requirements.

Item/Article 5, GSIN: 5305, NSN: 5305-20-A0V-3802
M16 X 1.5 X60mm DIN 960 Class 10.9 Part Number 1114040




Shop Categories

> All Products > Fasteners > Bolts > Hex Cap Screws and Hex Bolts



Compliance



CAD Drawings | Product Standards

- 3D
- 2D Front View
- 2D Left Side View
- 2D Sales Drawing

M16-1.5 x 60mm DIN 960 Class 10.9 Zinc Finish Hex Cap Screw

SKU: 11114040
UNSPSC: 31161501
Manufacturer: Fastenal Approved Vendor

This is an Expanded Catalog Item

Product Attributes	
Dia/Thread Size	M16-1.5
Finish	Zinc
Grade	Class 10.9
Length	60mm
Material	Steel
Specification	DIN 960
System of Measurement	Metric
Thread	Fine
Thread Type	Partial Thread
Type	Hex Cap Screw
Wrench Size	24mm
Product Weight	0.258
UOM	each

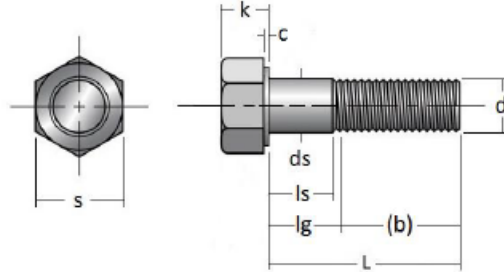
Notes

Hex Head Cap Screws are designed for easy assembly into a tapped hole. Specification 960 represents Partial Thread. Class 10.9 has a minimum

Page 1 of 3	Fastenal Product Standard	REV-01
Date: March 25, 2019	FASTENAL	M.HCS.960.10.9.YZ

Metric, Hex Cap Screw, DIN 960 Partially Threaded, Fine Thread, Class 10.9, Yellow Zinc

This product standard contains the required dimensional, mechanical, performance, and chemical characteristics of the products shown in this purchase order (as applicable to the product). Unless specified below, current revisions of national or international standards shall be applicable as of the date of Fastenal's purchase order and must be adhered to in their entirety. If the order received does not meet these requirements, corrective action may be issued which could jeopardize your status as an approved supplier to Fastenal.



Size	c		k				s		
	Washer Face Thickness		Head Height				Width Across Flats		
			Grade A		Grade B				
	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Min.	
								Grade A	Grade B
M8	0.15	0.6	5.15	5.45	5.06	5.54	13	12.73	12.57
M10	0.15	0.6	6.22	6.58	6.11	6.69	17	16.73	16.57
M12	0.15	0.6	7.32	7.68	7.21	7.79	19	18.67	18.48
M14	0.15	0.6	8.62	8.98	8.51	9.09	22	21.67	21.16
M16	0.2	0.8	9.82	10.18	9.71	10.29	24	23.67	23.16
M18	0.2	0.8	11.28	11.72	11.15	11.85	27	26.67	26.16
M20	0.2	0.8	12.28	12.72	12.15	12.85	30	29.67	29.16
M22	0.2	0.8	13.78	14.22	13.65	14.35	32	31.61	31
M24	0.2	0.8	14.78	15.22	14.65	15.35	36	35.38	35

Size	d				ds		
	Major Diameter				Body Diameter		
	Fine		Extra Fine		Min.		Max.
	Min.	Max.	Min.	Max.	Grade A	Grade B	
M8	7.794	7.974	-	-	7.78	7.64	8
M10	9.760	9.972	9.794	9.974	9.78	9.64	10
M12	11.732	11.968	11.760	11.972	11.73	11.57	12
M14	13.732	13.968	-	-	13.73	13.57	14
M16	15.732	15.968	-	-	15.73	15.57	16
M18	17.682	17.962	17.732	17.968	17.73	17.75	18
M20	19.682	19.962	19.732	19.968	19.67	19.48	20
M22	21.682	21.962	21.732	21.968	21.67	21.48	22
M24	23.682	23.962	-	-	23.67	23.48	24

Shank Lengths ls and lg

Page 2 of 3	Fastenal Product Standard	REV-01
Date: March 25, 2019	FASTENAL	M.HCS.960.10.9.YZ

I					M8 X 1		M10 X 1		M12 X 1.5		M14 X 1.5		M16 X 1.5	
					Product Grade		M10 X 1.25		M12 X					
Nom.	A		B		ls	lg	ls	lg	ls	lg	ls	lg	ls	lg
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
35	34.5	35.5	-	-	8	13	-	-	-	-	-	-	-	-
40	39.5	40.5	-	-	13	18	7.75	14	-	-	-	-	-	-
45	44.5	45.5	-	-	18	23	12.75	19	7.5	15	-	-	-	-
50	49.5	50.5	-	-	23	28	17.75	24	12.5	20	8.5	16	-	-
55	54.4	55.6	-	-	28	33	22.75	29	17.5	25	13.5	21	9.5	17
60	59.4	60.6	-	-	33	38	27.75	34	22.5	30	18.5	26	14.5	22
65	64.4	65.6	-	-	38	43	32.75	39	27.5	35	23.5	31	19.5	27
70	69.4	70.6	-	-	43	48	37.75	44	32.5	40	28.5	36	24.5	32
75	74.4	75.6	-	-	48	53	42.75	49	37.5	45	33.5	41	29.5	37
80	79.4	80.6	-	-	53	58	47.75	54	42.5	50	38.5	46	34.5	42
85	84.3	85.7	83.25	86.75	58	63	52.75	59	47.5	55	43.5	51	39.5	47
90	89.3	90.7	88.25	91.75	63	68	57.75	64	52.5	60	48.5	56	44.5	52
95	94.3	95.7	93.25	93.75	68	73	62.75	69	57.5	65	53.5	61	49.5	57
100	99.3	100.7	98.25	101.75	73	78	67.75	74	62.5	70	58.5	66	54.5	62
110	109.3	110.7	108.25	111.75	-	-	77.75	84	72.5	80	68.5	76	64.5	72
120	119.3	120.7	118.25	121.75	-	-	87.75	94	82.5	90	78.5	86	74.5	82

I					M18 x 2		M20 X 2		M22 x 2		M24 x 2	
					Product Grade		M18 x 1.5		M20 X 1.5		M22 x 1.5	
Nom.	A		B		ls	lg	ls	lg	ls	lg	ls	lg
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
35	34.5	35.5	-	-	-	-	-	-	-	-	-	-
40	39.5	40.5	-	-	-	-	-	-	-	-	-	-
45	44.5	45.5	-	-	-	-	-	-	-	-	-	-
50	49.5	50.5	-	-	-	-	-	-	-	-	-	-
55	54.4	55.6	-	-	-	-	-	-	-	-	-	-
60	59.4	60.6	-	-	-	-	-	-	-	-	-	-
65	64.4	65.6	-	-	13	23	9	19	-	-	-	-
70	69.4	70.6	-	-	18	28	14	24	10	20	-	-
75	74.4	75.6	-	-	23	33	19	29	15	25	-	-
80	79.4	80.6	-	-	28	38	24	34	20	30	16	26
85	84.3	85.7	83.25	86.75	33	43	29	39	25	35	21	31
90	89.3	90.7	88.25	91.75	38	48	34	44	30	40	26	36
95	94.3	95.7	93.25	93.75	43	53	39	49	35	45	31	41
100	99.3	100.7	98.25	101.75	48	58	44	54	40	50	36	46
110	109.3	110.7	108.25	111.75	58	68	54	64	50	60	46	56
120	119.3	120.7	118.25	121.75	68	78	64	74	60	70	56	66

Screws with nominal lengths above the stepped line must be threaded up to the head. The lg and ls values for bolts with nominal lengths below the stepped line must be determined by the following:
 $lg \text{ max.} = 1 - b$; $ls \text{ min.} = lb \text{ max.} - 5 p$.

Page 3 of 3	Fastenal Product Standard	REV-01
Date: March 25, 2019	FASTENAL	M.HCS.960.10.9.YZ

Specification Requirements:

- Dimensions: DIN 960; For dimensions not shown above, refer to DIN 960
- Threads: 6g per ISO 724; ISO 965-1
- Material & Mechanical Properties: ISO 898-1; Class 10.9
- Head Marking: Manufacturer's ID and 10.9
- Finish: ISO 4042/Zn5/C
Zn5/Gn per ISO 4042 may be accepted, provided that it meets Zn5/C performance requirements
- Material Test Reports: The MTR must have documented lot traceability, dimensional results, full chemical test results and full mechanical test results to the specification(s) above. In addition, the MTR shall be in full compliance with Fastenal's MTR Requirements.
- Quality Assurance Provisions: Category 3 of ASME B18.18

Revision Level Changes to this Document

Document Name	Revision Level	Revision Date	Rationale for Revision
M.HCS.960.10.9.YZ	00	6/18/2018	Revised title and changed threads to 6g per ISO 724; ISO 965-1.
M.HCS.960.10.9.YZ	01	3/25/2019	Added finish acceptance note.

The rationale above may not include all of the changes within each revision. A complete review of the Fastenal Product Standard is required.


Item/Article 6, GSIN: 5310, NSN: 5310-20-A0V-3800
SAE.GR9.YZ.03 Part Number 33246 (Structural Flat Washer)

https://www.fastenal.com/products/details/33246

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5/8" x 1.303" OD Thru-Hardened Yellow Zinc Finish Steel SAE General Purpose Flat Washer for Grade 9 Applications

Fastenal Part No. (SKU) 33246

UNSPSC 31161807

Manufacturer Fastenal Approved Vendor

This is a Catalog Item


Wholesale: \$1.95 / each
Online Price: \$1.37 / each

QTY

Compliance

Product Standards
Fastenal Product Standard

Alternative Items (1)


SKU: 11541088
5/8" x 1.303" OD Thru-Hardened ECOGUARD® Finish Steel SAE General Purpose Flat Washer for Grade 9 Applications
Manufacturer EcoGuard®

Product Attributes

Bolt Compatibility	Grade 9
Bolt Size	5/8"
Finish	Yellow Zinc
Grade	Thru-Hardened
Inner Diameter	0.641"
Material	Steel
Nominal Thickness	0.160"
Outer Diameter	1.303"
Style	SAE
System of Measurement	Imperial (Inch)
Type	General Purpose Flat Washer
Product Weight	0.0385
UOM	each

Supply Chain

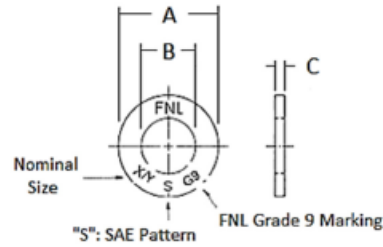
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Page 1 of 2	Fastenal Product Standard	REV-03
Date: August 2, 2019	FASTENAL	FW.SAE.GR9.YZ

Proprietary Standard, Flat Washer, SAE, Grade 9, Yellow Zinc

This product standard contains the required dimensional, mechanical, performance, and chemical characteristics of the products shown in this purchase order (as applicable to the product). Unless specified below, current revisions of national or international standards shall be applicable as of the date of Fastenal's purchase order and must be adhered to in their entirety. If the order received does not meet these requirements, corrective action may be issued which could jeopardize your status as an approved supplier to Fastenal.



Size	B		A		C	
	Outside Diameter		Inside Diameter		Thickness	
	Min.	Max.	Min.	Max.	Min.	Max.
1/4	.615	.635	.266	.276	.065	.080
5/16	.678	.698	.329	.339	.079	.093
3/8	.803	.823	.391	.401	.079	.093
7/16	.913	.933	.454	.464	.090	.106
1/2	1.053	1.073	.521	.531	.122	.146
9/16	1.170	1.190	.583	.593	.122	.146
5/8	1.303	1.323	.641	.651	.136	.152
3/4	1.458	1.478	.770	.780	.136	.160
7/8	1.740	1.760	.891	.901	.136	.160
1	1.985	2.015	1.081	1.101	.136	.160
1 1/8	2.243	2.280	1.206	1.226	.136	.160
1 1/4	2.493	2.530	1.331	1.351	.165	.192
1 1/2	2.985	3.030	1.618	1.655	.168	.192

Specification Requirements:

- **Dimensions:** ASME B18.21.1 (SAE style).** Exception: proprietary dimension limits
- **Material:** Carbon steel (AISI 1035-1075) or Alloy Steel
- **Mechanical Properties:** Appropriate to ASTM F606/F606M
All sizes:
Hardness: HRC 38 to 45
- **Marking:** Manufacturer ID "FNL", Nominal Size, "S" for SAE series and "G9" to indicate grade.

Page 2 of 2	Fastenal Product Standard	REV-03
Date: August 2, 2019	<i>FASTENAL</i>	FW.SAE.GR9.YZ

- Finish (If applicable): Fe/Zn 5C per ASTM F1941/F1941M
- Corrosion Performance: No white Rust, for a minimum 96 hours [ASTM B117 Test Method]
- Material Test Reports: The MTR must have documented lot traceability, dimensional results, full chemical test results and full mechanical test results to the specification(s) above. In addition, the MTR shall be in full compliance with Fastenal's MTR Requirements.

Revision Level Changes to this Document

Document Name	Revision Level	Revision Date	Rationale for Revision
FW.SAE.GR9.YZ	03	8/2/2019	Revised industry specifications.

The rationale above may not include all of the changes within each revision. A complete review of the Fastenal Product Standard is required.

Item/Article 7, GSIN: 5305, NSN: 5305-12-142-5183
DIN 960 M14 X 1.5 x55mm-8.8 A3P NSN 12-142-5183 (M14 Hex Cap Screw)



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Canadian Government Cataloguing System

Item Identification

NSN: 5305-12-142-5183

DMC: A

DPA1: N/A

DPA2: N/A

STATUS: Item is active

Date CGCS Established: 28-JUN-1999

STATUS Date: 22-DEC-1990

Last Updated: 03-DEC-2019

ITEM NAME: SCREW,CAP,HEXAGON HEAD

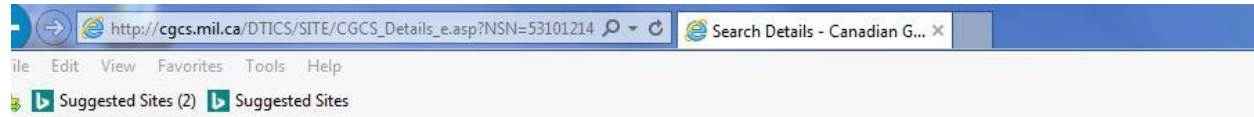
Narrative Description

22.0 MM NOM W BTWN FLATS,9.0 MM NOM H;STL,ZN AND CHROMATE SURF;M14X1.5-6G ISO;34.0 MM NOM THD LG;55.0 MM NOM FASTENER LG

USERS: DF, WG, YD, YP, YW, ZC, ZG, ZK, ZN, ZW, ZX

RNCC	RNVC	Reference Number	NCAGE
5	2	000960-014034	U1209
6	9	000960014249	A00AM
5	2	000960014249	D8046
5	2	900 03 80 3753	0CHW9
3	2	900 03 80 3753	S7622
2	2	DIN960-M14X1,5X55-8.8-A3P	D8286
2	2	DIN960-M14X1.5X55-8.8-A3P	D8286
5	9	DIN960M14X1,5X55-8.8A3P	D8286
5	9	DIN960M14X1-5X55-8-8A3P	D8286
5	9	DIN960M14X1-5X55-8-8GALZN8C	D8286
5	9	M14X1,5X55DIN960-8-8A3P	D8286

Item/Article 8, GSIN: 5310, NSN: 5310-12-142-0651
DIN 127-B14-A3P (Lock Washer 12-142-0651)



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Canadian Government Cataloguing System

Item Identification

NSN: 5310-12-142-0651

DMC: A
DPA1: N/A
DPA2: N/A

STATUS: Item is active

Date CGCS Established: 28-JUN-1999

STATUS Date: 08-NOV-1977

Last Updated: 21-MAY-2019


ITEM NAME: WASHER,LOCK



Characteristic	Reply
MATERIAL	OVERALL STEEL
MATERIAL DOCUMENT AND CLASSIFICATION	OVERALL DIN17221 ASSN STD SINGLE MATERIAL RESPONSE
SURFACE TREATMENT	OVERALL CHROMATE AND ZINC
SURFACE TREATMENT DOCUMENT AND CLASSIFICATION	OVERALL DIN267 ASSN STD SINGLE TREATMENT RESPONSE
HARDNESS RATING	44,0 ROCKWELL C MINIMUM AND 51,0 ROCKWELL C MAXIMUM
STYLE DESIGNATOR	SPLIT HELICAL-RIGHT HAND
HOLE DIAMETER	14,2 MILLIMETERS MINIMUM AND 14,7 MILLIMETERS MAXIMUM
OUTSIDE DIAMETER	24,1 MILLIMETERS MAXIMUM
MATERIAL THICKNESS	2,85 MILLIMETERS MINIMUM AND 3,15 MILLIMETERS MAXIMUM
SPECIFICATION/STANDARD DATA	D8286-DIN127/OKT87/ PROFESSIONAL/INDUSTRIAL ASSOCIATION STANDARD

USERS: CG, DF, QT, WB, WP, WZ, YB, YJ, ZB, ZC, ZF, ZG, ZR, ZS, ZT, ZU, ZW, ZX


RNCC	RNVC	Reference Number	NCAGE
5	2	42457	05573
5	2	6-271-0141	D0589
5	2	6271-0141	D0589

Item/Article 9, GSIN: 5310, NSN: 5310-20-A0V-3868
Thread: M16 x 1.5
DIN 934 Class 10 (M16 nut plain)

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M16 x 1.5 Steel Class 10 DIN 934 Hex Nut


Fastenal Part No. (SKU)	11508269
UNSPSC	31161727
Manufacturer	Fastenal Approved Vendor

 This is a Catalog Item

Product Attributes

Dia/Thread Size	M16-1.5
Finish	Plain
Grade	Class 10
Material	Steel
Specification	DIN 934
System of Measurement	Metric
Thickness	13mm
Thread	Fine
Type	Hex Nut
Wrench Size	24mm
Product Weight	0.0734
UOM	each

Compliance



CAD Drawings

[3D](#)

[2D Left Side View](#)

[2D Front View](#)

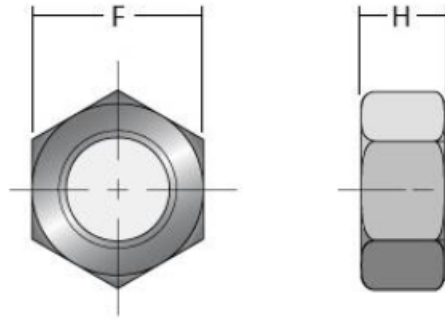
[2D Sales Drawing](#)

Product Standards

Page 1 of 3	Fastenal Product Standard	REV-00
Date: February 11, 2019	FASTENAL	M.FHN.934.10.P

Metric, Finished Hex Nut, DIN 934, Class 10, Plain

This product standard contains the required dimensional, mechanical, performance, and chemical characteristics of the products shown in this purchase order (as applicable to the product). Unless specified below, current revisions of national or international standards shall be applicable as of the date of Fastenal's purchase order and must be adhered to in their entirety. If the order received does not meet these requirements, corrective action may be issued which could jeopardize your status as an approved supplier to Fastenal.



Size	F		H	
	Width Across Flats		Thickness	
	Max.	Min.	Max.	Min.
M1	2.5	2.4	0.8	0.55
M1.2	3	2.9	1	0.75
M1.4	3	2.9	1.2	0.95
M1.6	3.2	3.02	1.3	1.05
M2	4	3.82	1.6	1.35
M2.5	5	4.82	2	1.75
M3	5.5	5.32	2.4	2.15
M3.5	6	5.82	2.8	2.55
M4	7	6.78	3.2	2.9
M5	8	7.78	4	3.7
M6	10	9.78	5	4.7
M7	11	10.73	5.5	5.2
M8	13	12.73	6.5	6.14
M10	17	16.73	8	7.64
M12	19	18.67	10	9.64
M14	22	21.67	11	10.3

Page 2 of 3	Fastenal Product Standard	REV-00
Date: February 11, 2019	FASTENAL	M.FHN.934.10.P

Size	F		H	
	Width Across Flats		Thickness	
	Max.	Min.	Max.	Min.
M16	24	23.67	13	12.3
M18	27	26.16	15	14.3
M20	30	29.16	16	14.9
M22	32	31	18	16.9
M24	36	35	19	17.7
M27	41	40	22	20.7
M30	46	45	24	22.7
M33	50	49	26	24.7
M36	55	53.8	29	27.4
M39	60	58.8	31	29.4
M42	65	63.1	34	32.4
M45	70	68.1	36	34.4
M48	75	73.1	38	36.4
M52	80	78.1	42	40.4
M56	85	82.8	45	43.4
M60	90	87.8	48	46.4
M64	95	92.8	51	49.1
M68	100	97.8	54	52.1
M72	105	102.8	58	56.1
M76	110	107.8	61	59.1
M80	115	112.8	64	62.1
M85	120	117.8	68	66.1
M90	130	127.5	72	70.1
M100	145	142.5	80	78.1
M110	155	152.5	88	85.8
M125	180	177.5	100	97.8
M140	200	195.4	112	109.8
M160	230	225.4	128	125.5

Specification Requirements:

- Dimensions: DIN 934
- Threads: 6H
- Material & Mechanical Properties: All nuts regardless of diameters shall meet the material and all mechanical requirements of DIN 267, Part 4; using the tensile stress area and the hardness of Class 10
- Product Marking: Manufacturer ID and Class 10 per DIN 267 Pt 4 on M5 nominal diameter and larger
- Finish: Light Protective Oil
- Material Test Reports: The MTR must have documented lot traceability, dimensional results, full chemical test results and full mechanical test results to the specification(s) above. In addition, the MTR shall be in full compliance with Fastenal's MTR Requirements.

Page 3 of 3	Fastenal Product Standard	REV-00
Date: February 11, 2019	FASTENAL	M.FHN.934.10.P

Revision Level Changes to this Document

Document Name	Revision Level	Revision Date	Rationale for Revision
M.FHN.934.10.P	00	2/11/2019	Revised title and added sizes.

The rationale above may not include all of the changes within each revision. A complete review of the Fastenal Product Standard is required.